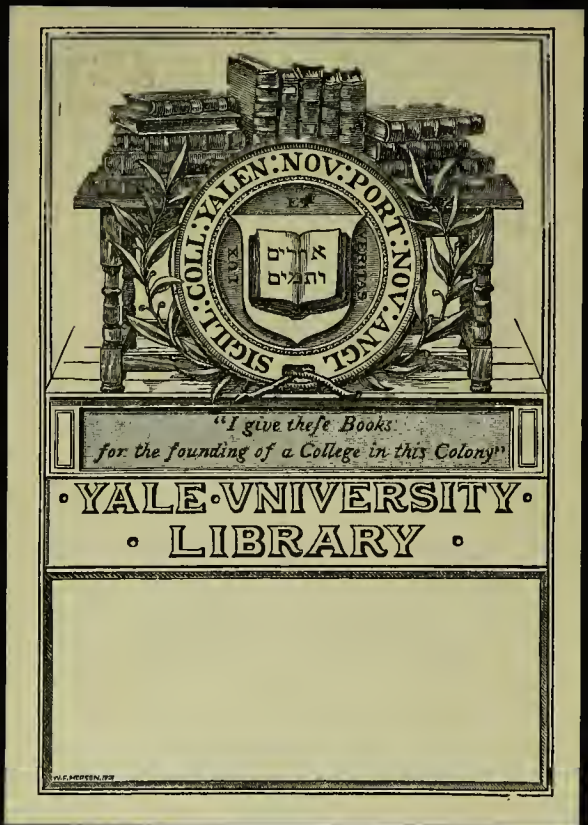
American congress of tuberculosis.

Bulletin. Vol.I. pt.I

New York,1900.



# American Congress

—OF—

# Tuberculosis,

Heid at the City of New York, February 22-23, 1900.

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UNDER THE AUSPICES OF

## The Medico-Legal Society.

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# BULLETIN.

VOL. I.—PART I.

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Published by the Medico Legal Journal,
39 Broadway, N. Y.
1900.

OFFICERS AND AUTHORS OF THE AMERICAN CONGRESS OF TUBERCULOLIS.

HENRY B. BAKER, M. D., Michigan,
Vice-President American Congress of Tuberculosis.

J. MOUNT BLEYER, M. D., N. Y City,
Vice-President American Congress of Tuberculosis

A. N. BELL, M. D , New York City,
President American Congress of Tuberculosis.

JOHN H. METZEROTT, M. D.,
Washington, D. C.

RALCY H. BELL, M. D., St. Louis, Mo.,
Vice-President American Congress of Tuberculosis,

# PREFACE.

To Lawyers, Legislators, Physicians and Publicists:

Ex-Judge Abram H. Dailey, a former President of the Medico-Legal Society, and a diligent student of the science of medical jurisprudence, when asked to send his views in reply to the following question:

What has been, in your opinion, the most notable advance in that branch of forensic medicine, with which you are familiar, during the nineteenth century?

replied as follows:

My answer is, that, in my opinion, that which has prevented the inception and spread of disease, through sanitary laws, based upon a knowledge of the causes of disease and the removal of the same, is the most notable.

The whole civilized world is interested in that subject. Medical and legal minds have everywhere been directed to it, and through their efforts legislative action has been taken, and thereby all civilized people enjoy a sense of security against the ravages of contagious diseases that they have never before experienced. The future is sure to increase this safeguard.

Dr. Henry B. Baker, Secretary and General Executive Manager of the Michigan State Board of Health, of Lansing, Mich., in response to the same question, said:

The most notable advance in Forensic Medicine, in the nineteenth century, is the aid which the Law gives to the restriction of that disease which causes most deaths.

One reason why this is true is because that disease which causes most deaths is now known to be a preventable disease. Another reason is that it destroys our people at the ages when, except for this disease, most of them are in the prime of life; most of them are at an age when the cost for their rearing and education is at its maximum; at least half of those who die of this disease are between the ages of twenty and forty-five years, when their value as wealth producers is greater than at any other period of age. This one preventable disease causes the deaths of more than one hundred thonsand persons in the United States, in every year. Considering the fifty thousand between the ages of twenty and forty years, if we estimate their value as wealth producers as equal to that of an average slave before the war, ($1,000), and considering the losses incident to the premature deaths of another fifty thousand persons, and incident to the long continued sickness from this disease, of the many thousands who finally recover enough to die of other diseases, it is a low

estimate that this country loses thereby one hundred million dollars per year.

Without the aid of the law, the restriction of this most important disease cannot be systematically and thoroughly entered upon; for this work, *notification of cases* must be required to be given to local health officials.

In 1893 the Michigan State Board of Health passed a resolution, "That hereafter, consumption (and other diseases due to the bacillus tuberculosis) shall be included in the official list of 'diseases dangerous to public health' referred to in the law requiring notice by householders and physicians to the local health officer as soon as such a disease is recognized." The requirement has not been fully complied with throughout the entire state, but there is reason to believe that partly in consequence of this action the death rate from that disease in Michigan has been reduced by rather more than one-tenth, and that the sickness from that disease has been decreased by a larger proportion. The success which has followed the imperfect action in Michigan, and in other states and countries, is good ground for a continuance in the belief which prompted the action—the belief that tuberculosis is a disease which can be restricted as soon as beneficent laws for this purpose shall be fully operative.

The medical profession has in the past, with that great conservatism, which seems to have been the inspiring thought of the medical mind of the nineteenth century, doubtless due to its methods of medical education in the American States, confined itself to the treatment of consumption.

It has been only very recently that a very few of the more courageous among medical men have declared publicly that consumption could be cured.

They have done this at the greatest risk, and as a rule have been denounced by their brethren as quacks and impostors.

Still, among the more advanced thinkers among medical men, the impression gains ground that it is a curable disease, while a majority of medical men to-day doubtless regard it as certainly in the class of diseases where preventative means are justifiable.

Advanced thinkers among medical men unite with great unanimity in declaring that it is infectious, and that the bacillus of tuberculosis is well determined, and certainly

ascertained and known, but this belief is believed to be far from universal, even among medical men.

That it is a proper subject for legislation, for the use of all proper means to prevent or arrest its spread or increase, is now very generally conceded, and the Michigan legislation, and the statistics from that state show, that similar legislation in other states, and still more radical measures, might be of great public good, in arresting the alarming spread of "this scourge of the human race."

This brings the question directly into the domain of medical jurisprudence.

How far can legislation be of service in affecting or securing beneficent results to mankind, in diminishing the volume of the disease, or in arresting its terrible advances.

The question has become one of profound and intense interest. It is the uppermost question of the hour. The recent Congress of Tuberculosis in Italy, the great interest in London and in the American States, made it advisable, in the opinion of the officers of the Medico-Legal Society, to bring it into prominence, and the organization of the American Congress of Tuberculosis was formed, as the results of its opening sessions on this theme. It is regarded simply as an introduction to the scientific world of the discussion.

The Bulletin, here issued, is only the few preliminary papers, or a part of them, that were read. The enrolling of members is kept open, and additional contributions are solicited. They will form Part Two of this volume.

An organization was perfected, and the collaboration of all who take an interest in the movement is desired.

The 13th International Medical Congress, of Paris, 1900, while it has not classified tuberculosis as a section, will doubtless discuss the questions involved at its august session. Delegates have been selected to lay before that body

the result of the preliminary labors of this First American Congress of Tuberculosis, and this Brochure is sent out as an invitation to all those who wish to unite in an effort to stay the ravages of this terrible disease.

CLARK BELL.

NEW YORK, June, 1900.

# AMERICAN CONGRESS OF TUBERCULOSIS

IN JOINT SESSION WITH THE

# Medico-Legal Society.

## New York, February 21-22, 1900.

At a meeting of the Medico-Legal Society held November 15th, 1899, the following action was taken:

The Chairman of the Executive Committee reported that the following resolution had been adopted by the Executive Committee:

'Resolved, That the evening of the 3rd Wednesday of February, 1900, and the succeeding day, be devoted to a discussion of "Tuberculosis and its Modern Treatment," and that expert scientists throughout the United States be invited to take part in this Congress;and that Prof.Thos.Bassett Keyes,M. D., of Chicago; J. Mount Bleyer, M. D., of New York, and Clark Bell, Esq., of New York, be named as a special committee to take the subject and the proposed meeting in charge, with power.'

The action of the Committee was ratified.

The Secretary reported that a plan of the meeting had been formulated, and a series of questions for discussion had met the approval of the select Committee, which would be submitted shortly to members and scientists in the form of a preliminary programme of the proposed Congress in February, 1900.

The Committee of Arrangements issued a Circular Letter to specialists throughout the United States, of which the following is a copy:

### CONGRESS ON "TUBERCULOSIS AND ITS MODERN TREATMENT.

**It has been decided by the management of the Medico-Legal Society, to devote an extraordinary session to "Studies on Tuberculosis, its Management and Modern Treatment," on the**

third Wednesday of February, 1900, at a regular meeting in this city, to open a full investigation and discussion of the whole subject, and to invite the leading American scientists and specialists to contribute papers, and unite in the discussion of this subject, and the most advanced and modern treatment of tuberculosis.

The following questions have been decided upon to be submitted for this discussion:

1st. Special hospitals and sanitariums, their construction and operation.

2d. What are the most successful methods of treatment?

3d. Individualization of certain forms of tuberculosis, its importance and necessity.

4th. Is change of climate a necessity for successful treatment?

5th. Should the use of anti-toxines in tuberculosis be condemned from a purely scientific point of view?

It is proposed to announce, in the programme, the name of one or more experts, who will submit a paper upon each of these questions.

As a large number of the specialists are willing to take part at the opening meeting, after the dinner at the opening session, at 7 p. m., on the 3d Wednesday, it is proposed to continue the Congress the next day, so as to make the discussion full and complete.

It is proposed not to limit the titles of papers to those stated questions, in case an author desires to submit his views upon any other germane subject that he prefers.

The great interest in this subject, on both sides of the Atlantic, which also has been given great prominence in the Paris Congress of 1900, will make the movement of great interest, not only for the profession, but also the general public. Members and others who are willing to take part are requested to immediately write to either member of the committee, upon which of these questions they will submit their views prior to the first of February next, if possible, so that the same may be printed and submitted to the others who are to take part, in advance of the meeting, as is the custom in foreign countries.

The following committee has been named by the Medico-Legal Society, to act as a Committee of Arrangements for this Congress, with full power, and the profession is desired to co-operate by contributing papers and to taking part in the dis-

cussion, and to advise either member of the committee as early as possible.

THOMAS BASSETT KEYES, M. D.,
98 State St., Chicago, Ill.
J. MOUNT BLEYER, M. D.,
460 Madison Ave., N. Y.
CLARK BELL, Esq.,
39 Broadway, N. Y.

Subsequently the Committee issued a preliminary programme, of which the following is a copy:

## PRELIMINARY PROGRAMME AND ANNOUNCEMENT.

Members of the Congress or of the Medico-Legal Society, who wish to participate in the opening Dinner, which will be given at 7 o'clock p. m., under the direction of the Committee of Arrangements, at the Hotel St. Andrews, 72d Street and Broadway, New York City, will please notify some member of the Committee the number of seats they require, the price of which will be $1.00 per plate, exclusive of wine.

The Congress will be organized at 9 o'clock p. m., and members or delegates who do not desire to unite in the dinner, will assemble promptly at that hour.

The following preliminary programme is announced, which is subject to modification, and the final programme will be prepared for the day of the opening of the Congress:

### FIRST DAY.

7 P. M.—The opening Dinner at the Hotel St. Andrews.

9 P. M.—The organization of the Congress, under the temporary officers announced by the Committee of arrangements.

*a.* Addresses of welcome to the members and delegates, by prominent public officials and the President of the Medico-Legal Society.

*b.* Response by the officers of the Congress of Tuberculosis in behalf of the Congress.

*c.* The enrolling of members of the Congress.

*d.* Appointment of Committees of the Congress.

*e.* The following subjects for discussion will be submitted to the Congress:

1. *Special Hospitals and Sanitariums; their Construction and Operation.* To be opened by J. Mount Bleyer, M. D., of New York, and discussed by Dr. S. Knopf, of New York; G. W. Van Vleck, M. D., Jackson, Mich.; Dr. E. Mather, Birmingham, Mich.; Dr. Karl von Ruck, Asheville, N. C.; Dr. Charles Denison, Denver, Colo.

### SECOND DAY, 10 A. M.

Report of Committee on Permanent Organization. Election of permanent officers.

2. *What are the Most Successful Methods of Treatment?* Discussion opened by Prof. Thos. Bassett Keyes, M. D., Chicago, and discussed by Dr. J. Mount Bleyer, New York; Prof. Theo. R. E. Klebs, M. D., Chicago; Dr. Judson Deland, Philadelphia; Dr. G. A. Evans, Brooklyn; Dr. John Blake White, New York; Dr. Wm. S. Gottheil, New York; Dr. Homer M. Thomas, Chicago; Charles E. Quimby, M. D., New York; Egbert Le Fevre, New York; Thos. Marshall Field, M. D., Chicago, aud others.

3. *Individualization of Certain Forms of Tuberculosis; its Importance and Necessity.* Discussion opened by Dr. Judson Deland, of Philadelphia, and discussed by Charles E. Quimby, M. D., New York; Dr. J. Mount Bleyer, New York, and others.

4. *Is Change of Climate a Necessity for Treatment?* Discussion opened by Dr. Karl von Ruck, Asheville, N. C., and discussed by Dr. S. A. Knopf, New York; Dr. G. A. Evans, Brooklyn, N. Y.; Dr. John Blake White, New York; Dr. John S. Robinson, Chicago; Dr. Wm. S. Gottheil, New York; Dr. Charles Denison, Denver; Dr. Judson Deland, Philadelphia; Dr. W. L. Dunn, Ashville, N. C.

SECOND DAY, 2 P. M.

Continuation of original questions submitted.

5. *Should the Use of Anti-toxines in Tuberculosis be Condemned, from a purely Scientific Point of View?* Discussion opened by Dr. Karl von Ruck, of Asheville, N. C., and continued by Dr. Charles Denison, Denver; Dr. W. L. Dunn, Asheville, N. C., and others.

ADDITIONAL SUBJECTS FOR DISCUSSION.

The following additional papers are announced:

6. *Contagiousness of Tuberculosis.* By E. L. Shurley, of Detroit, Mich.

7. *Registration of Tuberculosis.* By Lawrence P. Frick, M. D., of Philadelphia.

8. *A Denial of the Position* (claimed to be believed in by the mass of medical men) *as at present held, that the Baccillus of Tubercle is the Cause of Tuberculosis; and to ask, Would we not Reach desirable Prevention sooner to Consider it a Result rather than the Cause?* By Chas. Denison, M. D., of Denver, Colorado.

9. *A Study as to the Cause of Tuberculosis; an Important Factor as to its Treatment.* By Prof. Thomas Bassett Keyes, M. D., of Chicago.

Dr. Charles Denison, of Denver, suggests a theme for discussion:

10. *What are the Histological and Biological Changes essential for Tubercular Infection?* and the Committee invite discussion upon it.

The enrolling fee of the Congress is $3, which should accompany the application for membership, and entitles the member to the published transactions and to the Bulletin of the Congress.

The Committee of Arrangements have concluded arrangements with the Medico-Legal Journal to publish a Bulletin of the Transactions of the Congress.

To defray the expenses of this publication, over and above the enrolling fees, it has provided for speedy publication of the papers read, and the discussions, by which authors of papers

can have their contributions printed in the Bulletin at a cost of $1.00 per page small pica, and $1.50 per page small type, Journal page size, and each author entitled to 50 copies, as a reprint, free of charge, with privilege of extra reprints at cost of press-work and paper, if ordered in advance.

The opening papers of the discussion will be forwarded in advance of the session, to enrolled members, so far as possible, to provide for care in the preparation of the discussion.

Members are requested to submit the copy of their papers at once, to enable the same to be put speedily in type before the session, if possible, and to enable the publication of the Bulletin as early as possible.

The roll of the Congress will be kept open for the enrollment of members to the close of the session, and is free to all members of either profession, and to lay members, who are requested to forward their names as soon as possible.

Papers on additional themes than those named in this announcement; are invited, of which the title should be forwarded as soon as possible to the Committee of Arrangements, to enable proper classification to be made for the final programme, and the MSS. of the article should be forwarded to the Committee at the earliest moment.

The following persons have enrolled, and promised to contribute papers, the titles to which have not been announced to the Committee of Arrangements:

Surgeon General Walter Wyman, Marine Hospital Service U. S. N. Washington, D. C.; Egbert Le Fevre, M. D., of New York; Dr. Arthur R. Reynolds, Health Com., Chicago, Ill.; Dr. Edward F. Wells, of Chicago, Illinois; Prof. W. X. Sudduth, of Chicago, Illinois; Benj. F. Lyle, M. D., Cincinnati, Ohio.; Hubbard W. Mitchell, M. D., of New York; Charles E. Quimby, M. D., of New York; A. E. Osborne, M. D., Supt., Glen Ellen, Cal.; Elmer Densmore, M. D., of Brooklyn; Dr. A. N. Bell, Editor "Sanitarian," Brooklyn; Dr. H. Longstreet Taylor, of St. Paul, Minn.; R. A. Goeth, M. D., Boerne, Texas; M. J. Brooks, M. D., Supt., &c., Stamford, Conn.; Wm. A. Dickey, M. D., Toledo, Ohio; Harry F. Waite, M. D., of New York; John Elsner, M. D., of Denver.

It is the desire of the Committee to invite all those who are interested in the work of this Congress, to participate in its labors, and ro forward their names and title of their contributions as early as possible.

THOS. BASSETT KEYES, M. D., Chairman,
92 State Street, Chicago, Ills.

J. MOUNT BLEYER, M. D.,
460 Lexington Avenue, New York City.

CLARK BELL, Esq. LL. D., Sec. & Treas. of Com.
39 Broadway, New York City.

New York City, February 21, 1900.

# AMERICAN CONGRESS OF TUBERCULOSIS
IN JOINT SESSION WITH THE
# MEDICO-LEGAL SOCIETY.

## TRANSACTIONS.

### FEBRUARY SESSION, 1900.

The February session of the Medico-Legal Society was held at the Hotel St. Andrew, in joint session with the Congress of Tuberculosis, acting under the authorization of a Committee of Arrangements which had been named by the Society at the November meeting, 1899.

After the removal of the cloth, the Medico-Legal Society organized, the President, Clark Bell, Esq., in the chair, and H. Gerald Chapin, Esq., acting as secretary.

The reading of the minutes of the January meeting were, on motion, postponed until the March meeting.

The election of Treasurer and of vacancies in other offices were, on motion, postponed until the March meeting.

The following members were duly elected on recommendation of the Executive Committee:

A. Laura Joscelyn, 309 Broadway, New York City; Edward F. Ripley, Esq., Assistant District Attorney, Brooklyn, N. Y.; M. Strassman, New York City.

The Chair called upon the Committee of Arrangements for the Congress of Tuberculosis, for a report.

Dr. J. Mount Bleyer, from the Committee of Arrangements, reported:

That at the meeting of the Medico-Legal Society, held November 15, 1899, the following action was taken by that Society:

The Chairman of the Executive Committee reported that the following resolution had been adopted by the Executive Committee:

"*Resolved*, That the evening of the 3d Wednesday of February, 1900, and the succeeding day, be devoted to a discussion of 'Tuberculosis and its Modern Treatment,' and that expert scientists throughout the United States be invited to take part in this Congress, and that Prof. Thomas Bassett Keyes, M. D., of Chicago; J. Mount Bleyer, M. D., of New York, and Clark Bell, Esq., of New York, be named as a special committee to take the subject and the proposed meeting in charge, with power."

The action of the committee was ratified.

The Secretary reported that a plan of the meeting had been formulated, and a series of questions for discussion had met the approval of the Select Committee, which would be submitted shortly to members and scientists in the form of a preliminary programme of the proposed Congress of February, 1900.

1. That the Committee had sent out an announcement to medical men throughout the nation, inviting coöperation in the work of the Congress and stating five questions for discussion, as follows:

   *a*. Special Hospitals and Sanitariums; their Construction and Operation.

*b.* What are the Most Successful Methods of treatment?

*c.* Individualization of Certain Forms of Tuberculosis; its Importance and Necessity.

*d.* Is Change of Climate a Necessity for Treatment?

*e.* Should the Use of Anti-toxines in Tuberculosis be Condemned, from a purely Scientific Point of View?

2. That a very large number of replies had been received, and that later a preliminary programme and announcement had been sent by the Committee to all those who had responded favorably, of which a copy was published in the December number of the MEDICO-LEGAL JOURNAL.

3. That the Committee had forwarded the opening papers on questions *a* and *b*, to the members who had responded favorably, and were arranging to send others of the advanced sheets of the remaining printed papers to the members.

4. That the Committee had entered into an arrangement, as stated in the preliminary programme, with the MEDICO-LEGAL JOURNAL, to bring out such papers in the form of a bulletin.

5. That Mr. Clark Bell had been elected temporary Secretary and Treasurer of the Committee.

6. That the Committee of Arrangements submitted the following, as a list of temporary officers for the Congress of Tuberculosis, with the programme of the work of the Congress, as approved by the Committee:

## TEMPORARY OFFICERS.

*Honorary President.*—Roberts Barthalow, M. D. of Philadelphia, Pa.

*President.*—A. N Bell, M. D., of Brooklyn.

*Vice Presidents.*—Henry B. Baker, M. D., Secretary State Board of Health, Michigan; Ralcey Husted Bell, M. D., Editor "The Raven," St. Louis, Mo.; Chief Surgeon C. K. Cole, M. D., Helena, Mont.; Col. E. Chancellor, M. D., St. Louis, Mo.; T. D. Crothers, M. D., Hartford, Conn.; Judson Deland, M. D., Philadelphia, Pa.; Charles Denison, M. D., Denver, Col.; Prof. F. A. Leusman, M. D., Chicago, Ill.; U. O. B. Wingate, M. D., Secretary and Executive Officer Wisconsin State Board of Health, Milwaukee; Dwight S. Moore, M. D., Jamestown, N. D.; A. E. Osborne, M. D., Superintendent, Glen Ellen, Cal.; W. S. Gottheil, M. D., New York City; Prof. A. P. Grinnell, M. D., Burlington, Vt.; J. C. Wilson, M. D., Philadelphia, Pa.

*Secretary and Treasurer.*—Clark Bell, Esq., of New York City.

## PROGRAMME.

### FIRST DAY.

7 P. M.—The opening Dinner, at the Hotel St. Andrews, of the Medico-Legal Society, members and delegates.

9 P. M.—The organization of the Congress, under the temporary officers announced by the Committee of Arrangements.

*a.* Addresses of welcome to the members and delegates, by prominent public officials and the President of the Medico-Legal Society.

*b.* Response by the officers of the Congress of Tuberculosis in behalf of the Congress.

*c.* The enrolling of members of the Congress.

*d.* Appointment of Committees of the Congress.

*e.* The following subjects for discussion will be submitted to the Congress:

1. *Special Hospitals and Sanitariums; their Construction and Opera-*

*tion.* To be opened by J. Mount Bleyer, M. D., of New York, and discussed by G. W. Van Vleck, M. D., Jackson, Mich.; Dr. E. Mather, Birmingham, Mich.; Dr. Karl von Ruck, Asheville, N. C.; Dr. Charles Denison, Denver, Colo.; F. T. Labadie, M. D., of New York; W. S. Watson, M. D., of Fishkill, N. Y., and others.

SECOND DAY, 10 A. M.

Report of Committee on Permanent Organization. Election of permanent officers.

2. *What are the Most Successful Methods of Treatment?* Discussion opened by Prof. Thos. Bassett Keyes, M. D., Chicago, and discussed by Dr. J. Mount Bleyer, New York; Prof. Theo. R. E. Klebs, M. D., Chicago; Dr. Judson Deland, Philadelphia; Dr. G. A. Evans, Brooklyn; Dr. Wm. S. Gottheil, New York. H. W. Mitchell, M. D., of New York; M. A. Kopperl, Esq., of Austin, Texas; Dr. Homer M. Thomas, Chicago; Thos. Marshall Field, M. D., Chicago; F. T. Labadie, M. D., New York, and others.

3. *Individualization of Certain Forms of Tuberculosis; its Importance and Necessity.* Discussion opened by Dr. Judson Deland, of Philadelphia, and discussed by Dr. J. Mount Bleyer, New York; W. S. Watson, M. D., Fishkill-on-Hudson, N. Y. and others.

4. *Is Change of Climate a Necessity for Treatment?* Discussion opened by Dr. Karl von Ruck, Asheville, N. C., and discussed by Dr. G. A. Evans, Brooklyn, N. Y.; Dr. John S. Robinson, Chicago; Dr. Wm. S. Gottheil, New York; Dr. Charles Denison, Denver; Dr. Judson Deland, Philadelphia, and others.

5. *Should the Use of Anti-toxines in Tuberculosis be Condemned, from a purely Scientific Point of View?* Discussion opened by Dr. Karl von Ruck, Asheville, N. C., and continued by Dr. Charles Denison, Denver; F. T. Labadie, M. D., New York, and others.

SECOND DAY, 2 P. M.

ADDITIONAL SUBJECTS FOR DISCUSSION.

The following additional papers are announced :

6. *Contagiousness of Tuberculosis.* By E. L. Shurley, of Detroit, Mich.

7. *Registration of Tuberculosis.* By Lawrence P. Frick, M. D., of Philadelphia.

8. *A Denial of the Position* (claimed to be believed in by the mass of medical men) *as at present held, that the Bacillus of Tubercle is the Cause of Tuberculosis; and to ask, Would we not Reach desirable Prevention sooner to Consider it a result rather than the Cause?* By Chas. Denison, M. D., of Denver, Colorado.

9. *A Study as to the Cause of Tuberculosis; an Important Factor as to its Treatment.* By Prof. Thomas Bassett Keyes, M. D., of Chicago.

Dr. Charles Denison, of Denver, suggests a theme for discussion :

10. *What are the Histological and Biological Changes essential for Tubercular Infection?* and the Committee invite discussion upon it.

11. *Report on the Work of the Marine Hospital Service at Fort Stanton, New Mexico.* By Past Assistant Surgeon M. J. Rosenau, of Washington, D. C.

12. *The Rational Treatment of Tuberculosis.* By Col. E. Chancellor, M. D., St. Louis, Mo.

13. *Tuberculosis and Alcohol.* By T. D. Crothers, M. D., Vice-president Medico-Legal Society, Hartford, Conn.

14. *Demonstration of Electro-Sterilization of the Blood of the Tuberculous.* By Dr J. Mount Bleyer, of New York City.

15. *The Modern Treatment of Prophylaxis in Pulmonary Tuberculosis.* By M. J. Brooks, M. D., Stamford, Conn.

16. *Method of Passing a High Voltage Current Through the Chest, at the Same Time Giving Inhalation of Etectrified Air.* By Harry F. Waite, M. D., of New York City.

17. *Observation of Fifty Cases of Tuberculosis.* By Dr. Joseph E. Gichner, Baltimore, Md.

18. *My Own Case, with Deductions Derived from the Same.* By Dr. J. H. Metzerott, Washington, D. C.

19. *The Most Ideal Climatic Resort.* By Richard A. Goeth, M. D., Boerne, Texas.

20. *Extermination of the Human Race by Tuberculosis; Its Causes, Effect, Cure and Prevention.* By Francisque Crotte, A. M. Ph. D., of Paris.

The enrolling fee of the Congress is $3, which should accompany the application for membership, and entitles the member to the published transactions and to the Bulletin of the Congress.

The Committee of Arrangements have concluded arrangements with the Medico-Legal Journal to publish a Bulletin of the transactions of the congress.

To defray the expenses of this publication, over and above the enrolling fees, it has provided for speedy publication of the papers read, and the discussions, by which authors of papers can have their contributions printed in the Bulletin at a cost of $1.00 per page small pica, and $1.50 per page small type, Journal page size, and each author entitled to 50 copies, as a reprint, free of charge, with privilege of extra reprints at cost of press-work and paper if ordered in advance.

Members are requested to submit the copy of their papers at once, to enable the same to be put speedily in type before the session, if possible, and to enable the publication of the Bulletin as early as possible.

The roll of the Congress will be kept open for the enrollment of members to the close of the session, and is free to all members of either profession, and to lay members, who are requested to forward their names as soon as possible.

The following persons have responded to the first invitation of the Committee:

Surgeon General Walter Wyman, Marine Hospital Service, U. S. N., Washington, D. C.; Dr. Arthur R. Reynolds, Health Com., Chicago, Ill.; Dr. Edward F. Wells, of Chicago, Illinois; Prof. W. X. Suddnth, of Chicago, Illinois; Benj. F. Lyle, M. D., Cincinnati, Ohio; Charles E. Quimby, M. D., of New York; A. E. Osborne, M. D., Supt., Glen Ellen, Cal.; Elmer Densmore, M. D., of Brooklyn; Dr. A. N. Bell, Editor "Sanitarian," Brooklyn; Dr. H. Longstreet Taylor, of St. Paul, Minn.; R. A. Goeth, M. D., Boerne, Texas; M. J. Brooks, M. D., Supt., &c., Stamford, Conn.; Wm. A. Dickey, M. D., Toledo, Ohio; Harry F. Waite, M. D., of New York; John Elsner, M. D., of Denver; Henry B. Baker, M. D., Secretary State Board of Health, Lansing, Mich.; Chief Surgeon C. K. Cole, Helena, Montana; Col. E. Chancellor, M. D., St. Louis, Mo.; T. D. Crothers, M. D., Hartford, Conn.; Prof. A. Leusman, M D., of Chicago, Ill.; Roberts Barthalow, of Philadelphia, Pa.; James Tyson, M. D., Philadelphia, Pa.; Dwight S. Moore, M. D., Supt., North Dakota; U. O. B. Wingate, M. D., Milwaukee, Wis.; Ralcy Husted Bell, M. D., St. Louis, Mo; Harry F. Waite, M. D., of New York; J. H. Metzerott, M. D., of Washington, D. C.; Joseph E. Gichner, M. D., of

Baltimore, Md.; Surg. R. J. Rosenau, Marine Hospital, Washington, D.C.; M. A. Kopperl, Esq., Austin, Texas; Dr. J. Perkins, Providence, R. I.; Dr. J. C. Wilson, Philadelphia, Pa.; Prof. A. P. Grinnell, Burlington, Vt.; E. S. Osgood, Esq., Brooklyn, N. Y.; Dr. C. V. Massey, Chicago, Ill.; Dr. Samuel B. Ward, Albany, N. Y.; Dr. Richmond McKinney, Editor "Memphis Medical Monthly," Memphis, Tenn.; F. T. Labadie, M. D., of New York; W. S. Watson, M. D., Fishkill, N. Y.; Hubbard W. Mitchell, M. D., of New York.

THOS. BASSETT KEYES, M. D., Chairman,
96 State Street, Chicago, Ills.
J. MOUNT BLEYER, M. D.,
460 Lexington Avenue, New York City.
CLARK BELL, Esq., LL. D., Sec. & Treas. of Com.,
39 Broadway, New York City.
*Committee of Arrangements.*

CLARK BELL, President Medico-Legal Society.
H. GERALD CHAPIN, Esq., Secretary.
A. L. JOSCELYN, Acting Asst. Secretary.

New York City, February 21, 1900.

On motion the report of the Committee of Arrangements was received.

On motion the report of the Committee was adopted.

The Chair then stated that the Medico-Legal Society would go into joint session with the Congress of Tuberculosis, under the officers named by the Committee; the President of the Medico-Legal Society presiding with the President of the Congress of Tuberculosis jointly.

Mr. Clark Bell, President of the Medico-Legal Society, then introduced Dr. A. N. Bell, President of the American Congress of Tuberculosis, and made an address of welcome to the Congress.

President Clark Bell read a letter from William T. Jenkins, M. D., one of the Health Commissioners of New York City, who had been designated by the President of the Board of Health to attend and make an address of welcome, but was unavoidably kept away.

A message was received through M. A. Kopperl, Esq., from Ex-Governor J. H. Hogg, of Texas, who had accepted an invitation to make an address of welcome to the Congress, but whose illness had prevented him from attending.

H. Gerald Chapin, Esq., Secretary of the Society, then made a short address of welcome.

Dr. A. N. Bell then made an address in response, in behalf of the members of the Congress of Tuberculosis, and, at the request of President Clark Bell, took the Chair for the opening meeting of Congress.

Dr. A. N. Bell, President of the Congress, ordered the enrolling of members of the Congress to be kept open.

Mr. Clark Bell moved that Chairman A. N. Bell name a committee of three to submit nominations for permanent officers of the Congress at the session of February 22, 1900, with other committees and standing resolutions for the government of the Congress: seconded and carried unanimously.

The Chair named as such committee: Clark Bell, Esq., Chairman; Dr. Joseph E. Gichner, of Baltimore, Md., and M. A. Kopperl, Esq., of Austin, Texas.

The Chairman, Dr. A. N. Bell, then introduced Dr. J. Mount Bleyer, of New York City, who spoke on "Special Hospitals and Sanitariums; their Construction and Operation," which appear elsewhere in our columns, as "Colored Rays of Light," and gave illustrations.

Dr. Bleyer made an illustration and exhibition of the practical use of the light rays, in explanation of his paper.

The paper was discussed by Dr. F. T. Labadie, Dr. W. S. Watson, J. H. Metzerott, M. D., of Washington, D. C.; Dr. Joseph E. Gichner, of Baltimore, Md., and Dr. Charles Denison, of Denver.

Dr. John H. Metzerott, M. D., of Washington in discussing Dr. Bleyers' paper said:

The subject of light treatment is a new thing to me, but I have heard so much of it that I have ordered an apparatus from Professor Finsen, of Copenhagen. I have seen wonderful effects in the treatment of varions diseases by these rays of light. I have heard considerable in regard to this subject from my colleague, Dr. Merrill, from whom I understand that these actinic rays are developed from Crook's tubes, as well as from the apparatus which you have here. The actinic rays are the same, only the tubes are used instead of the prisms in their production. Dr. Merrill treated a patient who had lupus vulgaris. The diagnosis was in doubt; it could not be made microscopically, but clinically it was lupus. For about three weeks the patient was given sittings of about twenty minutes duration, twice a week, and he effected an entire cure. This case will be reported in one of the medical journals in a very short time.

I think we are on the eve now of a wonderful change in the treatment of this one disease, lupus, and from what I have heard and from what I have seen I believe we have at last found a cure.

The Congress took a recess until 10 a. m. of February 22, 1900.

## SECOND DAY, FEBRUARY 22, 1900.

Congress opened at 10 a. m.

President Clark Bell, Esq., of the Medico-Legal Society, in the Chair.

The Select Committee on permanent officers and standing committees and resolutions, made the following report:

The Select Committee named by the Congress of Tuberculosis in joint session with the Medico-Legal Society, on February 21, 1900, to nominate permanent officers for the Congress of Tuberculosis aud to recommend standing committees and resolutions, respectfully report:

1. They submit nominations for permanent officers of the Congress of Tuberculosis herewith;
2. They submit nominations for standing committees;
3. They submit resolutions for the consideration of the Congress, all of which are annexed.

CLARK BELL,
M. A. KOPPERL,
JOSEPH E. GICHNER, } Committee.

The Committee named by the President of the Congress to nominate permanent officers, respectfully recommend the following as permanent officers of the Congress:

Honorary President—A. N. Bell, M. D., of Brooklyn, N. Y.

President—Charles Denison, M. D., of Denver, Col.

Vice-Presidents—Henry B. Baker, M. D., Secretary State Board of Health, Mich.; Roberts Barthalow, M. D. of Philadelphia, Pa.; J. Mount Bleyer, M. D., of New York City; Ralcy Husted Bell, M. D., Editor "The Raven," St. Louis, Mo.; Chief Surgeon C. K. Cole, M. D., Helena, Mont.; Colonel E. Chanceellor, M. D., St. Louis, Mo.; T. D. Crothers, M. D., Hartford, Conn.; Judson Deland, M. D., Philadelphia, Pa.; Joseph E. Gichner, Baltimore, Md.; Prof. Thomas Bassett Keyes, M. D., Chicago, Ill.; Prof. F. A. Leuseman, M. D., Chicago, Ill.; U. O. B. Wingate,

M. D., Secretary and Executive Officer Wisconsin State Board of Health, Milwaukee, Wis.; Dwight S. Moore, M. D., Jamestown, N. D.; A. E. Osborne, M. D., Superintendent, Glen Ellen, Cal.; W. S. Gottheil, M. D., New York City; Prof. A. P. Grinnell, M. D., Burlington, Vt.; J. C. Wilson, M. D., Philadelphia, Pa.

The Select Committee, named by the Cbair at the opening session, respectfully report that they recommend the following standing committees:

Committee on Rules—J. Mount Bleyer, M. D., New York City, Chairman; T. D. Crothers, M. D., Hartford, Conn.; M. A. Kopperl, Esq., Austin, Texas.

Committee on Ways and Means—Henry B. Baker, M. D., Mich., Chairman; Prof. A. P. Grinnell, M. D., Burlington, Vt.; A. E. Osborne, M. D., of California; Charles Denison, M. D., of Denver, Col.; Karl Von Ruck, M. D., of North Carolina; Col. E. Chancellor, M. D., of St. Louis; J. C. Wilson, M. D., of Philadelphia.

Executive Committee—T. D. Crothers, M. D., of Conn., Chairman; Judson Deland, M. D., of Philadelphia; Joseph E. Gichner, M. D., of Maryland; William S. Gottheil, M. D., of New York; M. J. Brooks, M. D., of Connecticut; J. Mount Bleyer, M. D., of New York; Prof. Thomas Bassett Keyes, M. D., of Illinois.

The Committee further report that they recommend the adoption of the following resolutions:

1. *Resolved*, That Cushing's Manual be adopted by the Congress as the standard in parliamentary law.

2. *Resolved*, That the President and Secretary be ex-officio members of all standing committees.

3. *Resolved*, That a Bulletin of this Congress be published, provided the requisite funds can be secured to defray the expenses, on the plan and basis recommended by the Committee of Arrangements named by the Medico-Legal Society.

4. *Resolved*, That the original Committee of Arrangements have charge of the said publication with power: and that before the completion of the Bulletin, members and others be invited to continue the discussion opened by this Congress, to be embraced in the Bulletin, and copies of papers read be sent to all members (duly enrolled) for that purpose.

5. *Resolved*, That the President and Secretary be authorized to name delegates to represent this Congress in the International Medical Congress of 1900, at Paris, and report its work: and to all societies and bodies, home or abroad, who take an interest in the subject of its labors.

6. *Resolved*, That, as the sense of this Congress, this organization be made a permanent body, to meet at least once in each year at such time and place as shall be designated by its Executive Committee: and that all those who are interested in arresting the increase of Tuberculosis be invited to coöperate.

On motion the report of the Committee was received and on motion, unanimously adopted, and the officers and committees as recommended in the report, were declared by the chair to be duly elected.

On motion the resolutions recommended by the committee were unanimously adopted.

The regular order of business was then taken up on question number 2, on the programme, "What are the most Successful Methods of Treatment."

The paper of Prof. Thomas Bassett Keyes was then read as the opening paper.

The paper of Dr. Karl Von Ruck, on the discussion ot this question,

was then read in the absence of the author, by Dr. Joseph E. Gichner, of Baltimore.

The paper was discussed by Dr. J. Mount Bleyer, who read a paper entitled "Demonstration of Electro Sterilization of the Blood of the Tuberculous."

The paper was also discussed by T. F. Labadie, M. D., who read a paper entitled "Extermination of the Human Race by Tuberculosis; Its Causes, Effect, Cure and Prevention." By Francisque Crotte, A. M., Ph. D., of Paris, and F. T. Labadie, M. D., of New York.

Dr. Joseph E. Gichner, of Baltimore, discussed the paper.

Dr. G. W. Van Vleck, of Jackson, Michigan, contributed to the discussion of the question, a paper entitled "Tuberculosis."

Past Assistant Surgeon M. J. Rosenau, M. D., of the Marine Hospital Service, on designation and detail of Surgeon General Walter Wyman, M. D., Marine Hospital Service, United States Navy, then read a paper entitled "Report on the Work of the Marine Hospital Service at Fort Stanton, New Mexico.

This paper was discussed by Dr. J. Mount Bleyer, and Dr. Joseph E. Gichner.

The third question of the programme, "Individualization of Certain Forms of Tuberculosis, its Importance and Necessity," was then taken up, and in the absence of Dr. Judson Deland, of Philadelphia, who had promised to read the opening paper, his paper was read by title and he was requested to furnish it to the congress.

The fourth question was then taken up "Is Change of Climate a Necessity for Treatment?" and the discussion opened by Dr. Karl Von Ruck, of Asheville, North Carolina.

In the absence of the author Dr. Von Ruck's paper was read by Dr. F. T. Labadie, of New York.

This paper was discussed by Dr. Charles Denison, of Denver, who contributed a paper, which appears elsewhere in this number.

The fifth question was then taken up "Should the use of Anti-toxines in Tuberculosis be Condemned, from a Purely Scientific Point of View?"

The discussion was opened by a paper by Dr. Karl Von Ruck, of Asheville, North Carolina, which in the absence of the author was read by M. A. Kopperl, Esq., of Austin, Texas.

Dr. Joseph E. Gichner, of Baltimore, Maryland, then read a paper entitled "Observations of Fifty Cases of Tuberculosis."

Richard A. Goeth, M. D., of Boerne, Texas, then presented a paper entitled "The Most Ideal Climatic Resort."

The Chair read a letter from Prof. Thomas Bassett Keyes, announcing the serious illness of his child, which prevented his attendance, and his paper, number 9 on the programme, was at his request read by title.

The Chair read a telegram from Col. E. Chancellor, M. D., of St. Louis, explaining that a serious case of illness, which was impossible for him to neglect, prevented his attendance as he had promised by telegraph, and his paper, which is number 12 on the programme, was read by title.

At the request of Dr. Harry F. Waite, New York City, his paper entitled "Method of Passing a High Voltage Current Through the Chest, at Same Time giving Inhalation of Electrified Air," was read by title.

Dr. J. H. Metzerott, of Washington. D. C., who attended the Congress on the 21st, was accidently prevented from attending the morning session, and on motion it was ordered that his paper be read by title and he was requested to furnish it to the Secretary. Entitled "My Own Case; with Deductions Derived from the Same."

In the absence of the following papers, as announced upon the programme, it was on motion, ordered that the several papers be read by title, and that the authors be requested to furnish copies of their several papers to the Secretary, to be incorporated in the Bulletin.

6. "Contagiousness of Tuberculosis." By E. L. Shurley, of Detroit, Michigan.

7. "Registration of Tuberculosis." By Lawrence P. Frick, M. D., of Philadelphia.

8. "A Denial of the Position (claimed to be believed in by the mass of medical men) as at present held, that the Baccillus of Tubercle is the Cause of Tuberculosis; and to ask, Would we not Reach desirable Prevention sooner to Consider it a Result rather than the Cause?" By Charles Denison, M. D., Denver, Col.

Dr. Charles Denison, of Denver, suggests a theme for discussion:

10. "What are the Histological and Biological Changes essential for Tubercular Infection?" and the Committee invite discussion upon it.

13. "Tuberculosis and Alcohol." By T. D. Crothers, M. D. Vice-president Medico-Legal Society, Hartford, Conn.

15. "The Modern Treatment of Prophylaxis of Pulmonary Tuberculosis." By M. J. Brooks, M. D., of Stamford, Conn.

M. A. Kopperl, Esq., then offered the following resolutions:

*Resolved*, That the Executive Committee shall have full power over all affairs of the body; three members shall constitute a quorum on a regular call.

*Resolved*, That vacancies in all offices and committees may be filled by the Executive Committee.

*Resolved*, That the Executive Committee shall have the power of removal and substitution of any officer or member of a Committee, who is not in attendance at the Cougress, or who should be in default of payment of enrolling fee, after a reasonable call and non-payment and of substitution of a name instead.

*Resolved*, That the members and others be invited to send to the Secretary their views in discussion of each paper presented to the Congress and that they be included in the Bulletin.

Dr. Davis then appeared and asked to be enrolled as a member, which was granted, the Congress then adjourned, subject to the call of the Officers or on action of the Executive Committee.

For the Medico-Legal Society,

CLARK BELL, President.
H. GERALD CHAPIN, Secretary.

For the American Congress of Tuberculosis,

A. N. BELL, M. D., President.
CLARK BELL, Secretary.

## OFFICERS OF THE AMERICAN CONGRESS OF TUBERCULOSIS, UNDER THE AUSPICES OF THE MEDICO-LEGAL SOCIETY.

HONORARY PRESIDENT—Roberts Barthalow, M. D., of Philadelphia.

PRESIDENT—A. N. Bell, M. D., of Brooklyn.

VICE-PRESIDENTS—Henry B. Baker, M. D., Sec. State Board of Heatlh, Mich.; Ralcy Husted Bell, M. D., Editor "The Raven," St. Louis, Mo.; J. Mount Bleyer, M. D., of New York City; Chief Surgeon C. K. Cole, M. D., Helena, Mont.; Colonel E. Chancellor, M. D., St. Louis, Mo.; T. D. Crothers, M. D., Hartford, Conn.; Judson Deland, M. D., Philadelphia, Pa.; Charles Denison, M. D., Denver, Col.; Jos. E. Gichner, M. D., Baltimore, Md.; Prof. Thos. Bassett Keyes, M. D., of Chicago, Ill.; Prof. F. A. Leuseman, M. D., Chicago, Ill.; U. O. B. Wingate, M. D., Secretary State Board of Health of Wisconsin, Milwaukee; Dwight S. Moore, M. D., Jamestown, N. D.; A. E. Osborne, M. D., Superintendent, Glen Ellen, Cal.; W. S. Gottheil, M. D., New York City; Prof. A. P. Grinnell, M. D., Burlington, Vt.; J. C. Wilson, M. D., Philadelphia, Pa.

SECRETARY AD TREASURER—Clark Bell, Esq., New York City.

[NOTE:—Dr. Charles Denison, Denver, who was chosen for Permanent President, was not present at the meeting, and in correspondence, before the Congress, had stated that he preferred not to hold any office, notwithstanding which he was selected by the Committee for the Presidency, and elected Permanent President. He telegraphed the Secretary, on the second day, declining to allow his name to be used for that office, but the telegram did not reach the Secretary till the evening of the 22d of February, after the Congress had adjourned. He later, by letter, declined to serve as President. This leaves Dr. A. N. Bell, of Brooklyn, Permanent President, until the Executive Committee select some one in his place; and it leaves Dr. Roberts Barthalow Honorary President, and Dr. Charles Denison one of the Vice-Presidents, subject to the action of the Executive Committee.] CLARK BELL, Secretary.

## MARCH SESSION, 1900.

March 21, 1900, Society met at Dinner at the St. Andrew's Hotel, the President, Clark Bell, in the chair, and A. Laura Joscelyn, Acting Assistant Secretary, acting as Secretary.

The minutes of the February meeting of the joint session of the Society of the American Congress of Tuberculosis, as printed in the March number of the MEDICO-LEGAL JOURNAL, were read and approved.

The election of Treasurer and other vacancies, adjourned to this evening, was, on motion, postponed to the April meeting.

A letter from Vice-President T. D. Crothers, M. D., was read, explaining his absence and requesting that his paper, announced, be read by title. The paper, "Alcohol and Tuberculosis," was read by title.

The paper of M. J. Brooks, M. D., of Stamford, Conn., entitled "The Modern Treatment of Prophylaxis of Pulmonary Tuberculosis," in the absence of the author, was read by Dr. J. Mount Bleyer, M. D.

Dr. Harry F. Waite then read his paper, entitled "Methods of Passing a High Voltage Current Through the Chest, at Same Time Giving Inhalation of Electrified Air," and made demonstrations illustrating the same.

The paper of Dr. J. H. Metzerot, M. D., entitled "My Own Case; with Deductions Derived from the Same," was read by the Secretary.

The Paper of Dr. W.S. Watson, Fishkill-on-the-Hudson, entitled "Sanitariums for Tuberculosis and Best Methods of Treatment," was read.

A paper contributed by Dr. H. B. Baker, Secretary and Chief Executive Officer of the State Board of Health of Michigan, entitled "The Communicability and the Restriction of Consumption," was read, in the absence of the author, by the Acting Assistant Secretary, A. Laura Joscelyn.

A paper by Dr. B. F. Lyle, of Cincinnati, entitled "A Study as to the

Cause of Tuberculosis, an Important Factor in its Treatment," was read by Dr. Harry F. Waite, of N. Y. City.

The papers were discussed as a whole by the following: Dr. J. Mount Bleyer, Dr. Harry F. Waite, Victor Constant, Esq., Mr. T. B. Pandian, of India, who gave a statement as to the ravages of tuberculosis in that country; Hon. Jacob F. Miller, Henry B. Keesing, Esq., and the President.

Geo. Chaffee, M. D., contributed the following to the discussion of the papers read before the American Congress of Tuberculosis:

The calling of the American Congress of Tuberculosis was a most praiseworthy act. There is no subject in the domain of medicine that deserves more careful consideration from both the profession and the public than does this great question of tuberculosis, and I trust that this effort and discussion may be continued until some definite and practical resnlts are reached.

Of late I have been interested in tuberculosis from the standpoint of a railway surgeon, believing that the tubercle bacillus, when introduced into proper soil and under favorable conditions, was the cause of tuberculosis. Under this conviction I have written editorially, advising care, isolation or compartments in sleeping-coaches for consumptives, thorongh disinfection, etc.

For Dr. Denison's views on any subject I have always had the highest regard and am willing to admit, with him, that we may not yet know the real cause of tuberculosis. Dr. Denison's "Preliminary Remarks" and his paper on "Change of Climate" are both very instructive indeed, and should go a long way toward starting this work on the right track. I heartily endorse the substance of both papers.

In our fight against disease one fact to be borne in mind is the importance of keeping the resisting powers of the patient, or of nature, at the highest possible point. Here in the city, where we are constantly breathing a germ-laden atmosphere, I have noticed that when a person's vitality becomes reduced from any cause, say from a severe or neglected cold, an attack of grip, or pneumonia, overwork or depression from any cause, it frequently happens that tuberculosis follows. It would seem that in our tenement houses, where several are packed in one or two small sleeping rooms, re-breathing the same impure air for several hours, that they would become easy victims for tuberculosis—and such is frequently the case. It also frequently happens that members of well-to-do families, living in the best appointed houses in the city, spending much of their time in the open air dnring a part of the year, fall victims to consnmption. Again, we frequently read in our medical journals of a "consumptive house," where a physician has had from three to five cases of consumption in the same house, but in different families, in perhaps as many years. Ever since the germ theory of consumption was advanced, the sleeping-coach has been regarded as a dangerous point and as affording an easy means of spreading disease.

I trust that this question regarding the cause of tuberculosis may soon be settled. If necessary, a commission should be appointed by the President of the United States and placed in charge of a well-equipped laboratory, for the purpose of investigation and research along this line. For my own part I do not hesitate to say that I am afraid of the tubercle bacillus. I am inclined to give it the credit of playing a more important part in the cause of tubercnlosis and in the destruction of human life than Dr. Denison is inclined to do.

In regard to Dr. Keyes' plan of "Camp and Out Door Life," it is considered the most valuable feature in the treatment of tuberculosis, and excellent results should follow such practice. I have a patient now who is living in a tent in Colorado, and he has already been greatly benefited by this mode of outdoor life.

Last summer Dr. Frank H. Caldwell, then Chief Snrgeon of the Plant System, established a camp hospital at Clearwater, Florida, on a high

## NEWLY ELECTED OFFICERS AND AUTHORS.

F. T. Labadie, M D., New York City.
Secretary American Auxiliary Committee and Delegate to the International Medical Congress 1900, Paris.

F. Crotte, Ph. D., New York City.
Author Article American Congress of Tuberculousis.

Ada M. Chevallie , M. D.,
Vice-President for British Honduras, Belize, B. H.

H. Gerald Chapin, Esq., LL. D.,
Secretary Med -Leg. Soc., New York City.

A. Laura Joscelyn, Treas. Elect,
Sec'y Ex. Com. Psychological Sec. Medico-Legal Society.

bluff overlooking the Gulf of Mexico, in a beautiful grove of cedar, oak and pine. This camp hospital is intended for the care and treatment of chronic and convalescent cases that may be sent there from the other hospitals of the railway company. While this camp hospital is not limited to tuberculous cases it demonstrates the value of camp life in the treatment of other forms of disease.

If these camps could be located at favorable points in different parts of the country, with a view to season changes and other features, we might reasonably expect a falling off in the mortality of tuberculous.

But until Dr. Denison, or some one else, is able to satisfy us that consumption does not depend upon a germ for its cause, there should be national legislation with rules and regulations to guide and govern these tuberculous people in their movements about the country.

I can endorse the points made in Dr. Keyes' paper in every respect. with but one exception, and that is his system of "over-feeding." I do not think it is wise to over-feed any one, either sick or well.

The Acting Secretary contributed the following announcement from the notices of the meeting as a part of the transactions of this evening :

The interest aroused in the subject of tuberculosis, at the recent joint session of the American Congress of Tuberculosis with this Society, exceeds the anticipations of the most sanguine in our body. A permanent organization was effected, and the papers that were read are, many of them, of a high order.

Quite a number of the papers announced by the authority of the authors were not, however, in readiness at the session, and it was learned that more time was needed to complete some of the promised papers.

The Medico-Legal Society decided to devote the March session to a further consideration of this subject.

The papers read this evening, and some others, have been received since the session of the Congress, and will be printed and copies forwarded to members and others, who are expected to discuss the same

The officers of the American Congress of Tuberculosis, and its members, are invited to take part in the discussion, and to contribute papers upon the themes specified in the programme, or other phases of the question, with the view of embracing the same in Part I of the Bulletin of the American Congress of Tuberculosis, now in process of publication, on the same basis as named in the programme.

Titles of papers are solicited from those to whom this invitation is sent, with completed papers, if possible, so as to make the discussion thereof continued, of interest and value to the professions, and add to the value of the Bulletin of the Congress, of which it will form a part.

The enrolling as members of the American Congress of Tuberculosis continues, and new accessions come from all parts of the nation. The enrolling fee, $3, entitles the member to the published transactions and to a copy of the Bulletin free, if the same is printed and sufficient funds obtained for its publication.

The members of the Medico-Legal Society are invited to take part in the discussion, and to enroll in the American Congress of Tuberculosis, if they take an interest in the work.

The following resolution was, after general discussion, unanimously adopted :

*Resolved*, That the members of the Medico-Legal Society be requested to invite the medical members of the Society, and the medical and legal professions, both in and out of the Society, to contribute papers on the subject under discussion in the American Congress of Tuberculosis, or to the discussion of those already submitted, and that the same be contributed to the labors of the Congress, and published in the second part of the Bulletin of the Congress; that such contributions be requested to be completed as early as possible, and before the fall meeting of the Society. The titles to contributions to be announced before July 1, 1900, if possible.

It was, on motion, unanimously

*Resolved*, That the President be authorized to appoint delegates to represent this Society to the various sections of the International Congress of 1900, at Paris, France, and to all home and foreign societies and organizations, for the current year, on consultation with members of the Society who contemplate going abroad the coming season.

The Chair announced the death of Dr. E. R. Wood, of Scotland Neck, N. C., late Medical Superintendent of the State Hospital for the Insane at Raleigh, N. C., and paid a tribute to his useful life and to his sterling qualities as a man, and his public services as a physician.

The Chair announced the death, at Cleveland, Ohio, of Professor Elwell, author of Elwell's Medical Jurisprudence, and passed enconiums on his career as a medico-legal jurist, and called attention to his gallant conduct as a soldier and general in the War of the Rebellion.

Mr. Bell also announced the death of Dr. Chas. H. Ingraham, of Binghampton, N. Y., who had died recently of consumption, and paid a tribute to his life and career, cut short by this dread disease.

The Society adjourned.

CLARK BELL, President.
A. LAURA JOSCELYN,
Acting Assistant Secretary.

# ADDRESS OF WELCOME.

BY CLARK BELL, ESQ., LL. D., PRESIDENT OF THE MEDICO-LEGAL SOCIETY.

*Fellows and Delegates to the American Congress of Tuberculosis:*

This is a subject which is attracting national and I may say international, attention. The ravages of tuberculosis has attraced the attention of the medical profession throughout the world. In England, not long since, a movement in aid of ameliorating the condition of those who suffer, and of ascertaining what was the best means of affording a remedy; was presided over by his Royal Highness, the Prince of Wales, and resulted in the inauguration of a movement for the establishment of a hospital for consumptives in the City of London. It has arrested the attention of medical men and scientists in Germany. It has aroused deep interest in the breast of King Oscar of Sweden, and it is probably the uppermost question among medical men in the United States at this moment. Two journals in this country are devoted to it specially, or admost specially, and I am glad to see presenthere this eveing the representative of the leading journal on tuberculosis in the United States, whose senior editor has contributed some of the ablest papers which will be presented to the Congress at its session tomorrow.

It is therefore a source of just pleasure and pride to the Medico-Legal Society, that it can be the medium, and the means, by which the students of the science of the proper treatment of tuberculosis, and the many problems connected with it, can, if possible, unify and crystallize and put into some concrete form and shape, the results of the labors of that army of workers in the medical profession who are now investigating and studying this subject, as it has never before been studied in the United States.

We feel that this is but an initial movement. We feel the *raison d'etre* of this cause will be the introduction of the subject for discussion.

[Before the members of the American Congress of Tuberculosis, in joint session with the Medico-Legal Society, February 2, 1900.]

The Assistant Surgeon General, having charge of the marine hospital at Washington, Assistant Surgeon General Wyman, has written us of the Committee, expressing the great and deep interest he has felt in it, and he has detailed one of the most brilliant men of his staff to come here to attend this Congress, and you will hear from him at tomorrow's session as he is present and announced for a paper.

It is therefore with great pride and pleasure that the Medico-Legal Society, which has always devoted itself to the advancement of every department of Forensic Medicine and ever in the interest of true science, can be said to have been the proper medium, by which the views of all the thinkers in the great West, on the Atlantic Coast, in the South, and throughout the Union generally, may contribute their best judgment and their best facts and experience upon subjects, about which the medical profession is now very widely divided in many respects, with a view of bringing them to a proper and scientific investigation of the problems connected with this subject.

The Medico-Legal features, of such a discussion as is here opened to the Students of Tuberculosis, are of the greatest moment, to the human race.

Laymen, jurists and legislators are deeply anxious and solicitous for a scientific, conclusive settlement, and determination, by scientific men of skill, learning and ability; not only the series of questions which were formulated and promulgated by the Committee, but for light as to what is to be the proper relation of the State by Legislation, to the whole subject.

There may be and probably is today, a nearer approach to unanimity in the medical profession on certain questions, on which lawyers and legislators need light and scientific advice.

For the past half century the Medical Faculty has pronounced Tuberculosis as incurable.

Although since our boyhood we have heard the Syren Song of "the retired clergyman whose sands of life had nearly run out;" we have been told, to at once set down as a quack, anyone who offered a specific for the cure of Tuberculosis.

We have however lately heard louder whispers of marvellous cures, and an ambitious young physician in our own city, has openly announced himself as capable of curing the disease with utter disregard of the anathemas of the faculty of medicine here. He has used the discovery of a Frenchman

with considerable success, as is claimed by his friends; and other medical men in this city and in the nation, are claiming that Tuberculosis is now under absolute medical control.

The legal profession desire to have the answer to the question of whether this disease can be cured,—not only—but whether there has been in fact, any anti-toxin serum for Tuberculosis yet found?

Is it now an established fact in science, that the bacterial toxin of Tuberculosis, is now discovered, located and so defined, as to be beyond doubt of question?

The mission of this Congress regarded from my own standpoint, is and will be to open the discussion and lend impetus, and zeal to the efforts made by the students of the science in this interesting domain of human endeavor.

It gives me peculiar pleasure to introduce Dr. A. N. Bell as the presiding officer of this Congress, who will sit with me, occupying the chair during this meeting. Dr. Bell has all his life been devoted to this particular branch of science. It has been my good fortune to have known him for the past quarter of a century. I have been identified very largely with the labor which he has been engaged in, because he has investigated other subjects besides sanitary science, and has won the distinction by his labors in this city and in this nation, which your committee appreciates by placing him in the Presidency of this Congress.

I transfer the presiding chair at this moment to Dr. A. N. Bell. Before doing so, however, I must say, that I had arranged to have an address made here at this moment, before I left the chair, by Governor Hogg, of Texas, who is here in this city, and who promised me to-day to come and make that address. He has been suffering two or three days with an illness and Mr. M. A. Kopperl, of the bar of Texas, who is also present as a delegate to the Congress, has been with him this evening, and he reports to me that the Governor is so ill that he will be unable to come, as it might seriously injure his health to do so. He is confined to his bed with an attack which threatens to be pneumonia, so he will be obliged to forego the pleasure of his presence.

I will say in addition that I invited President Murphy of the Board of Health to come here and make the opening address. President Murphy is not well. He is an invalid, and he replied to me that he was not able to come, but that he

would designate a member of his staff to represent him, Dr. Wm. T. Jenkins, who accepted the invitation, and it was understood yesterday that he was to come; he agreed to come, but I received a letter this afternoon explaining why it was impossible for him to get here, so that the address which was to be given by Governor Hogg and also the one to be given by Commissioner Jenkins will have to be omitted.

Before I leave the Chair, I will ask the Secretary of this Society, Mr. H. Gerald Chapin, of the bar of New York, to say a few words of welcome to the Congress which is about to begin before the chairman take his seat.

# ADDRESS OF WELCOME.

BY H. GERALD CHAPIN, ESQ., LL. D.

Members of the American Congress on Tuberculosis, Members of the Medico-Legal Society:—I fear that any more address of welcome on my part would be largely a work of supererogation after the hearty words of our honored President. Mr. Bell.

The measure of value placed by mankind upon human achievement often seems passing strange. The name of the soldier who executed a heroic though foolish charge against Russian batteries in the war of the Crimea is emblazoned on the roll of fame though but few outside of the medical profession revere the name of heroic Dr. Morton, who struggling through poverty and r(everses sufficient, we might almost say, to conquer the most dauntless, fi.ally succeeded in introducing chloroform as an anaesthetic. What achievement in the history of the world has done more for the liberty of mankind than did the acquittal of the seven bishops by which the free right of petition was established, and yet in order to ascertain the names of our brother advocates who so manfully stood forth and defied the power of the Stuarts, we must turn to our histories for an answer.

As President Clark Bell has just stated, it is questionable whether any subject is of more importance at the present day than is the subject of tuberculosis. Other diseases sweep off their thousands, tuberculosis its tens of thousands. The man who will promote legislation for—who will discover a means of checking the malady will prove greater, aye a thousand times greater than he who perchance has rushed to the attack and crash of bursting shell.

Alas, we do very little after all, towards the advancement of science. Our individual achievements are as the grain of sand on the seashore, as a drop of water in the ocean, and yet if before we finally lay aside our hopes and fears, our joys and

[Before the members of the American Congress of Tuberculosis, in joint session with the Medico-Legal Society, February 21, 1900.]

sorrows, we have added but the one grain, the single drop, we shall not have lived in vain.

I feel that it is of no use to expatiate at length upon our pleasure in your presence, for a welcome loses all its significance if we attempt to measure its length and breadth, its width and thickness, and true sympathy may oft lose itself among the mazes of rhetoric. My only desire is that you may appreciate the fact that I utter the sentiments of every member of the Medico-Legal Society when I simply say that we are glad that y'ou are with us tonight. (Applause).

# OPENING ADDRESS.

DR. A. N. BELL, PRESIDENT OF THE AMERICAN CONGRESS OF TUBERCULOSIS.

Ladies and Gentlemen; Members and Guests of this Congress:—My inspiration for the few remarks I have to make at this opening is the first subject on the programme, and for it I must pay tribute to the honored gentleman who has so long labored in this sphere. I highly appreciate his kindly reference to my devotion to preventive medicine, and I am glad of the opportunity to give expression to the pleasure I have taken in his co-operation for the last quarter of a century.

The particular and most neglected element in the progress that has been made for the prevention of tuberculosis, to which I have referred as the first subject on the programme, is food. Indeed it has been my privilege for more than two quarters of a century to have taken note of, to have studied the conditions and to have participated to some extent in the efforts to prevent tuberculosis

But it hardly need to be remarked in this presence, that fifty years ago the medical profession was all at sea with regard to the causation and prevention of tuberculosis. The nature of the disease at that time was to physicians as to every body else an inscrutable mystery, and its prevalence was thought to be beyond human control. Nevertheless, it soon became manifest to those engaged in the work of sanitary reform, begun in England but a few years before, that the greatest prevalence of tuberculosis was among the occupants of stifling rookeries in filthy and overcrowded districts. As these were swept away, the soil cleansed, air and light admitted, and the whilom tenants supplied with improved dwellings and more food—though with little regard to its nature—the reduction of mortality from tuberculosis was great enough to mislead the earlier sanitary reformers into the belief that tuberculosis was like some other diseases against which they

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contended; dependent upon filthy surroundings, a stifling atmosphere and insufficient food,and they encouraged this belief with such energy as was not displayed anywhere else in the world; insomuch as to show the great value of cleanliness in the reduction of the mortality from it in England,began thirty years before Koch's discovery of the tubercle bacillus and was increasingly gaining ground at the time of that discovery. Official statistics of the period show that beginning with the first five years of complete registration, 1850-54, the mortality from consumption in England and Wales was 2811 per 1,000,000 of the living population per annum; 1864-68 it ranged from 2602 to 2336 per 1,000,000 per annum. 1882-1888, the first seven years from the time of Koch's discovery, but before the preventive measures which it suggested were much practiced, the death rates from consumption ranged from 1752 to 1541 per 1,000,000 of living population per annum. Beyond question this great reduction was almost wholly due to domiciliary improvements, the regulation of factory employments, school house sanitation, provision for outdoor occupations and exercises, and general cleanliness, These measures have been continued and considerably elaborated during recent years, plus the instituion and practice of new measures and methods suggested by Koch's immortal discovery, most of all by the establishment of special hospitals and sanitariums for the better care and treatment of the disease and the disinfection of premises and things used by consumptives.

According to the latest returns accessible by hurried reference, an hour before this meeting, the death rate from consumption in England and Wales for 1892-93 was 1468 per 1,000,000 of population per annum,a reduction of about 47 per cent. during the last fifty years.

This progress is the more interesting and encouraging because it has been accomplished under home conditions. Every observer knows that mountain and sea air is much freer from all kinds of organisms than the air of populous cities, or plains at sea level. That such air is beneficial to consumptives is probably no more true than that is to other invalids; and commendable, barring the questionable nature of the soil, weather and dust exposure and house drainage in the one case; capacity of the sleeping quarters, means of ventilation, liabilty to emanations from bilge water in the other.

It is far from my purpose, however, to disparage such resorts. On the contrary, I deem them highly beneficial in many cases, if chosen with due regard to the conditions suggested; but chiefly with reference to the treatment of tuberculosis, which is not the subject of these remarks. The purpose of this reference is to emphasize the universality of tuberculosis, rather tubercle bacilli.

The number of localities referred to in the history of tuberculosis, throughout the world, said to be exempt from it, is so small as to justify the conclusion that no place inhabitable by man is exempt, that tubercle bacilli are universally distributed. They are proportionally active with the density of population, the prevalence of conditions favorable to their reception and tolerance, and deficient power of resistance. The accessory conditions are for the most part implied in what I have already said about foul soil, foul air, poor diet, etc.

Some writers are wont to refer to Iceland and some other Arctic and sub-arctic regions, whose inhabitants rarely or never have consumption, though they commonly sleep in stifling huts, reeking with offensive emanations and are but raely or never cleaned. Moreover, the denizens of such huts at night, habitually expose themselves in the daytime to the worst possible conditions of weather. Their exemption from tuberculosis is commonly attributed to the extreme cold of such regions, and the erroneous inference drawn that outdoor exposure in frigid climates is commendable for consumptives.

The food of these exempt communities is almost wholly of an animal character, the fattest portions and "toodnoo," a kind of butter made of the separated fat of reindeer, of which they eat enormous amounts.

Moreover, besides their power of resistance to the tubercle bacillus, the Esquimaux and other inhabitants of the arctic regions who live on such food,are possessed of gigantic muscular powers. They are able to lift and carry burdens twice as heavy as those which the seamen visiting them are able to carry.

In similar regions where the inhabitants or immigrants do not so live, tuberculosis is no less, indeed, among some of them it is much more rife than it is among communities in temperate latitudes.

The exemption from tuberculosis in such circumstances is, in my judgment, properly attributable to the potentiality of the

fatty food. My cnclusion in this regard is fortified by many years observation of the liability to consumption of peoples collectively, families and individuals, more or less proportional to their abstinence from fatty foods. The most prominent example of whom, I have never lost sight of from youth up—the negro race in America.

I began my professional life among them when they were slaves and were always supplied with an abundance of "hog and hominy," not by any means restricted to these articles, but pork or bacon was a standing portion of at least one daily meal. Consumption among them was relatively rare.

My observation in this respect was not singular but in accord with all other medical observers of the time of whom I have knowledge. Conversely, it seems hardly necessary to invite attention—so common is the prevalence of consumption among the same people now under their changed conditions with regard to diet. "Hog" at least, is notable by its absence from the daily fare of most of them and no other fat meat has taken its place; and consumption among them is more than twice as great.

The same observation extends to smaller communities, families and individuals. Consumption is most prevalent among those who are stinted or who stint themselves of "bacon" and "butter." I mention these as ideal and the most digestible of fat foods; others are commendable.

Whole volumes and many essays have been published on food for consumptives, but nothing of cnsequence on food prevention of consumption.

My purpose in the citations I have made is to intensify attention to food in its preventative aspect. Everybody has learned, when it is unfortunately, in most cases, too late, that cod liver oil is good for consumptives, but few scem to have learned that food of the same character as cod liver oil, suitable for the table is preventive of consumption.

In the whole course of my professional observation, now covering a period of nearly sixty years, I have never known a family or an individual that was brought up on a liberal supply of butter and bacon that became tubeculous. Moreover, such food fortifies the system against other diseases as well as consumption. But this is no occasion for other subjects.

I hope that the subject I have introduced may be taken up and elaborated by members of this Congress,and that it may be my privilege to read and know more about it. (Applause.)

# COLORED RAYS OF LIGHT.

**Experiments Show Them to Become a Most Important Adjunct in the Treatment of Tuberculosis.**

BY DR. J. MOUNT BLEYER, F. R. A M. S., LL. D., OF N. Y. CITY.

The subject of light rays have of late attracted such attention in the medical world, that, to the thinking, up-to-date physician, a want is felt for a simple, though scientific, explanation of the more salient points of the laws of light in operation. I merely here shall make an attempt to place before the busy practitioner a resume in a comprehensive manner so as to enable him to weigh thoroughly those most vital principles, concerning us here interested. This will aid in quickly grasping the true scientific value of their possible connection with therapeutics.

We are now beginning to apply the finer forces of nature in the treatment of various diseases and it certainly behooves us therefore to study more in detail at least the fundamental principles of them. Light is one of the most useful and powerful adjuncts in the entire catagory of remedies at our command. Why not then try and understand its laws and best modes of its application. It is my intimacy with the laws of light rays that tempted me in bringing before you this subject, dished up in a palatable form, and so cooked to suit the most wavering appetite. ' It is hoped that this discourse will be one of the means at least in starting up the interest for the more liberal use of a force which is known to be so powerful in its influence upon the entire cosmos. We already know sufficient of light and its finer forces to warrant a more extensive investigation in every domain of medicine. This force (light) is receiving more attention since the discovery of the "X" ray, and we are now on the eve of going into the scientific end of all this more daily, and there is no doubt that some still more valuable application will soon be unearthed to us for the use of light rays to combat diseases with. Already it has many followers all over the world; their labratories and

Read before the Medico-Legal Society and Congress of Tuberculosis, February 21, 1900.

wards of their hospitals are kept busy experimenting with these subtle powers of the various rays of light, and soon we may expect to hear of some startling truths. So with these remarks, I beg you to follow me through the various known principles and laws connected with light from which the "whys and wherefores" shall be expounded here which will aid those too busy to study the question with a knowledge necessary for their comprehension in adopting rays of light to therapeutics.

I am much alive to the criticism that I shall be subjected to, as the knowledge of my experiments and the conclusions deduced from them as they become diffused, while others, again, grasping them in their important relations, as by intuition, welcome it as a long step in advance in the knowledge of the great truths in physics, which mankind are so anxious in this age to acquire. All this is perfectly natural. The little knowldege which men have has been acquired by great labors, industry, privation, and perhaps through a long course of arduous study. They are, therefore, loath to abandon preconceived notions upon any subject. It would be a loss of so much mental capital. A new idea, therefore, upon any familiar subject naturally excites doubt, and is met with disapproval until, by a full and free discussion, its merits are understood, when, if it is established by facts and conclusive reasoning upon them, it is accepted as sound, though it may displace all pre-existing notions in opposition to it.

I take the liberty to present to you some important facts in connection with colour rays of light and their valuable influences, as an adjunct in the treatment of tuberculosis and other diseases.

These facts which are very curious, instructive and important, are the results of experiments, which are so surprising, that through this communication I make known my results to your most learned body for their crucial and impartial good judgment.

In the New York Medical Journal, February 22nd, 1896, under the heading, "Crooke's X-rays and Other Light Rays," "—a problem yet to be solved in therapeutics,' &c. My publication then was a forerunner of a series of experiments then under way to determine the effects of certain light rays standing high in the violet scale of the spectrum on animal and vegetable life. In this communication to your Congress I

propose to give you all that I learned by experimental work which is hoped will become of service to us in the treatment of those diseases which need more subtle power than mere remedies.

While still the world at present is engaged in the work of solving the problem of the penetrative power of the cathode rays and from the already known facts which they have yielded to us, it is but fair to presume that other rays than those of the cathode must have some other effective qualities which may be of valuable service as remedial agents. We know that the cathode rays do force their way through opaque bodies that ordinarily arrest the transit of sunlight has been demonstrated, and the questions to be solved are as to the practical and valuable application of these and other peculiar properties of colour light rays as remedial agents, &c.

We know, or rather Roentgen has told us, that unlike sunlight these cathode rays do not undulate in waves from their source of origin, but move backward and forward, and to this property the power to penetrate opaque bodies is most probable due; as has been mooted,this power as demonstrated may be an energy in the shape of radiation. The advantages from this source alone that have, and still may further accrue from it in our domain as a means of diagnosis, has already been much spoken of, and it only remains still to complete the experiments that will demonstrate the means of those and other rays of their more practical application.

Aside from all our present knowledge of them it is fair to presume that certain rays have a subtler power than this one of penetration. Ordinary sun light with its varying colors, is one of the main factors in development and growth of animal life. We have studied the effects in this direction, and know that sunlight is essential for the growth and development of both animal and vegetable tissue.

The sublest chemical force is sunlight; it brings about the most powerful reactions that are apparent yet and not entirely undemonstrable. We see the reaction of a ray of sunlight upon a plate prepared with sensitive salts and observe the chemical decomposition, and thousands of other similar examples.

So, too, do we watch its action upon the plant, and we know that colour, strength and fructification depend to a large measure upon light rays.

The same applies to animal life. We have in light rays, a therapeutic agent that has been underestimated; if not altogether lost sight of and neglected to a great measure. The few thoughtful men who have striven to advance the title of light rays in this direction have been scoffed at. Their labors have not been accorded respectful consideration, simply because the average therapist will adopt nothing that cannot be demonstrated in the glass receiver of his labratory, the reaction of which he can not see going on before his eyes, and the formula of which he cannot determine. In the light of recent observations we are slowly arriving at the realization that some of our principles of therapeutics must soon change; that their Waterloo is impending.

In presenting my work for your criticism I shall confine myself only to study the isolated colour rays of the sun and those violet rays as produced by the arc light. The X-ray will not be considered from any point of therapeutics in this discourse, as we do not understand them sufficiently enough as yet.

It is always a good plan to pursue, in speaking of physical phenomena, to bring to your notice again by way of recapitulation a few known facts on light rays in order to refresh the wavering memory and also show thereby the course of my reasoning pursued throughout these researches.

All students of chemistry and physics remember that in the analysis of the ray of the sun by the prism, in the year 1666, by Sir Isaac Newton, he had resolved it into the seven primary rays, viz.: Red, orange, yellow, green, blue, indigo and violet, and had discovered that these elementary rays had different indices of refraction; that for the red ray at one side of the solar spectrum being the least, while that of the violet at the opposite side thereof was the greatest, from which he deduced his celebrated doctrine of the different refrangibility of the rays of light; and further, that Sir John Herschel, in his subsequent investigation of the properties of light, has shown that the chemical power of the solar ray is greatest in the blue rays, which give the least light of any of the luminous prismatic radiations, but the largest quantity of solar heat. Some of my later experiments establish the fact of the stimulating and remedial influence of the blue and violet rays upon vegetation and animal bodies. I, therefore, some eight years ago, concluded to make practical my knowledge on the appli-

cation of the properties of the blue and violet rays of light, as to their stimulating value in lost vitality of the human organism from such causes, as in fevers and infections of many kinds; also in cases where the human body is in a weak condition, due to inheritance, &c. I began to inquire in every accessible direction if this stimulating and sterilizing quality of the blue and violet ray has ever received any practical useful application. My inquiries developed the facts that various experiments had been made in England and on the Continent with coloured glass with each of several primary rays. Also knowing of the former few successful experiments made by the authorities of the Horticultural Department, at Washington, D. C., by the use of the electric arc light posted over green houses for the purpose of ascertaining the facts of actinic rays upon vegetation. Their experiments were crowned by the most successful results in forcing the growth of vegetation to enormous size, and in much less time than under the best and normal conditions. Those experiments of Genl. A. J. Pleasanton are too well known to receive any comment from me. Some of these experiments were more than satisfactory proof that it is possible to force development, both in vegetable and animal kingdom, under different conditions. Finding however, with all due respect to my predecessors in the line of experimentation, a few beaten tracks, I was, nevertheless, left to myself to grope the way as best I could under the guidance of the violet and blue rays, and those produced by the electric arc light, &c.

Before going further into this subject, let me attempt an explanation of some of the phenomena which the blue and violet rays of light have in general upon vegetation and the animal body. It is well known that differences of temperature evolve electricity, as do also evaporation, pressure suddenly produced or suddenly removed in which may be comprised a blow or stroke; as, for instance, from the horse-shoe in the rapid motion of a horse on a stone in the pavement, striking fire, which is kindled by the electricity evolved in the impact, or again, from the collision of two silicious stones in which there is no iron, is electricity produced.

Friction even of two pieces of dried wood excites combustion by the evolution of hydrogen gas which bursts into flame when brought into contact with the opposite electricity—evolved by the heat. Chrystillization, the freezing of water,

the melting of ice or snow, every act of combustion in respiration, every movement and contraction of organic tissues, and, indeed, every change in the form of matter evolves electricity, which in turn contributes to form new modifications of the matter which has yielded it.

The diamond, about whose origin so much mystery has always existed, it is likely, is the product of decomposition of carbonic acid gas in the higher atmosphere by electricity liberating the oxygen gas, converting it into ozone, fusing the carbon, and by the intense cold there prevailing, which is of opposite electricity, chrystallizing the fused carbon, which is precipitated by its gravity to the earth.

To the repellent affinity of electricity are we indebted for the expansive force of steam whose power wields the mighty trip-hammer, propels the ship through the ocean, and draws the train over the land—and to the opposite electricities of the heated steam and the cold water, introduced into the boiler to replenish it, do we owe those terrible explosions in the steam boilers whose prevention has hitherto defied human skill. But the interesting application of electricity, is in nature's development of vegetation. Let me illustrate it. Seed perfectly dried, but still retaining the vital principles. like the seed of wheat preserved for thousands of years in mummy cases in the catacombs of Egypt, if planted in a soil of the richest alluvial deposits, also thoroughly dried, will not germinate. Why? Let us examine. The alluvial soil is composed of the debris of hills and mountains containing an extensive variety of metallic and metalloid compounds mingled with the remains of vegetable and animal matter in a state of great communition, wasted by rains and carried by freshests into the depressions of the surface of the earth. These various elements of the soil have different electrical attributes. In a perfectly dry state no electrical action will occur among them, but let the rain, bringing with it ammonia and carbonic acid, in however minute quantities, from the upper atmosphere, fall upon this alluvial soil, so as to moisten its mass within the influence of light, heat and air and plant your seed within it, and what will you observe. Rapid germination of the seed. Why? The slightly acidulated, or it may be alkaline, water of the rain has formed the medium to excite galvanic currents of electricity in the heterogeneous matter of the alluvial soil;—the vitality of the seed is devel-

oped and vegetable life is the result. Hence vegetable life owes its existence to electricity.

Light is one of the forms of radiant energy, being transmitted from place to place by means of transverse vibrations of the medium ether, which fills the whole of space. This mode of transmission is known as "wave-motion," the nature of which is well illustrated by the progression in water of the disturbance due to an impulse given to it at any point, e. g., by dropping in a stone, the disturbance travels onward as an undulation, as a succession of waves, while the water particles oscillate about their point to rest, but do not undergo any motion of permanent translation. The distance from crest to crest of two succeeding waves is the wave-length, differences in which do not cause any change in velocity of propogation of a wave of light through the ether.

Although the length of the waves which constitute radiation is extremely small, being measured in millionths of a millimetre, the various effects produced by this radiant energy, viz.: those of heating, illumination, and chemical change, are due solely to differences in wave-lengths; in other words, heat, light, and actinic rays are not different things, but a ray of radiant energy possesses the property of producing thermal, luminous, and actinic effects to an extent depending upon its wave-lengths. But whereas all rays are thermic to some degree, provided they fall on a suitable surface, it is not all rays which are capable of producing a luminous of actinic effect. With sunlight we find that a length of 600 to 800 millionths of a millimetre we get a luminous effect; while a powerful photographic effect is produced by those rays which have wave-lengths between 200 and 400 millionths of a millimetre. In speaking, therefore, of light rays it must be understood that what follows does not refer any to those rays which by the constitution of the eye, happen to produce a luminous effect.

But besides differences in wave-lengths, or distance from crest to crest of two succeeding waves, the extent of vibration of the ether particles—their amplitude—may vary; just as we can imagine the size or height of sea-waves to vary instantly altering the distance from one wave to the next, the hollows and crests being only more marked. Now, since this is caused by the particles moving from a greater distance from their position of rest, they must possess greater energy

or be capable of doing more work; in other words increase in amplitude causes increase in intensity, and many photographic and other phenomena are dependent upon, and can be explained by, deficiencies in the intensity of the vibrations.

Waves of greater frequency than those which produce a sensation of violet do not produce any sensation in the eye at all, but they do effect, as I said before, a photographic plate; they induce chemical action, and are called ultra violet or actinic waves.

The velocity of light upon the earth's surface has been found by Leon Faucault, by experiments most carefully conducted, to be 298,000 kilometres, or 186,000 miles per second of time. That shows with what an enormous rapidity that light travels and what the results must be when suddenly stopped and sufficiently concentrated by means of lenses, or even alone by allowing the mere penetration of light through a media, as the case may be, viz.: by the simple intervention of a coloured media in the form of coloured glass, or either a coloured fluid, or the light as generated by the electric arc light. Various such modifications produce different results. Now of the seven primary rays of light all of them, excepting the blue ray and its compounds, purple, indigo, and ultra violet, which perhaps are decomposed, and the rest liberated, are suddenly arrested in their marvellously rapid course, on coming in contact with a coloured media, or coloured glass, or fluid. This sudden impact of the intercepted rays on the outer surface of blue glass, or coloured media, &c., with this inconceivable speed, produces a large amount of friction. Light, though imponderable, yet is material,since according to the book of Genesis, "God said, 'Let light be made,' and it was made," and the movement of matter upon matter always produces friction. By friction, electricity is evolved, and when opposite electricities meet in conjunction, their conflict, according to the celebrated philosopher, "Oersted," develops magnetism. The electricity produced by this friction is negative, while the electrical condition of the colored glass, &c., is opposite, or positive, and heat is therefore evolved by their conjunction. This heat sufficiently expands the pores of the glass, to pass through it, and then you have within any compartment or solarium a source for generating coloured rays of light for therapeutic purposes, electricity, magnetism, light and heat; all essential elements of

vital force. These are some of the physical principles which operate, when coloured glass is made use of, for generating actinic rays. But, as I said before, the chemical rays of light can be generated according to the power wanted, by different methods. As for instance: By sunlight, concentrated by means of lenses and coloured media for intercepting the heat rays.By the arc electric light, concentrated by lenses and coloured media, &c. By the different sun condensers and arc electric lights. Each of these methods have their own different therapeutic effects and value.

Chemical action is merely a synonym for electrical action, hence in all the functions of the animal body, from its birth to its dissolution, we may observe the influence of electrical currents, the development of magnetism, by the conjunction of them, oppositely electrified, and the production of heat. In the first inspiration of atmospheric air into the lungs where it encounters the blood oppositely electrified, heat and magnetism are evolved, and the purified blood has one electricity, which repels itself into the heart, and thence by the arteries through the system. When it reaches the capillaries it has lost more than two degrees of its temperature, and being forced through the capillaries, or small arteries, into the veins, as well by the repulsion of the electricity of the arterial blood, as attracted by the opposite electricity by the veins and the blood they contain, the temperature in increased till it reaches 98 degrees Fahrenheit, which it carries with it to the heart.

We have thus seen that the magnetic, electric and thermic powers of the Sun's rays reside in the violet ray, which is a compound of the blue and red rays. These constitute what are termed the chemical powers of the sunlight. That they are the most important powers of nature, there can be no doubt, as without them life cannot exist on this planet. Without these chemical powers there could be no vegetation or anything else.

Light is inimical to, and under favorable conditions may wholly prevent, the development of organism. The action of light entirely destroys the bacteria, or reduces them to a condition of torpidity, which requires months of darkness in favorable surroundings for them to overcome. In my experiments which were made I took small test tubes containing cultivation fluid, which were suspended in deep, narrow boxes made of garnet, red, yellow, blue and ordinary glass, respec-

tively. Although the blue and yellow glasses were not monochronomatic, the results showed that the action is chiefly dependent on the blue and the violet rays.

It is probable, therefore, that if the phenomena were represented by a curve, the maximum elevation would be found in or near the violet. The organisms, in which many of the experiments were carried out, afford an example of proto-plasm in a simple and uncomplicated form, but it would be unreasonable to suppose that this proto-plasm is so essentially different in its fundamental constitution from all of the protoplasm, that here, and here only, is this special effect of light to be found. There are many facts which prove the contrary and indicate, not with a special and fortuitous phenomenon, but with a general law.

I have found that not all the rays of the spectrum are able to exert an influence upon the direction of the movement of the spores, it being only those which are strongly refracted (blue, indigo, and violet) that produce stimulation.

If a vessel containing a deep coloured solution of ammoniated copper oxide, which only transmit blue or violet rays, be placed between the source of light and the preparation, the spores are seen to re-act just as if they came in contact with ordinary white light; on the other hand, they do not reach at all to light, which if passed through bichromate of potassium solution, through the yellow vapor of a sodium flame, or through ruby-red glass, another very important and complex manifestation of the effects due to light is seen in the movements of the chlorophyll corpuscles.

Light acts as a stimulus to animal and plant proto-plasm. It induces characteristic changes of form in individual cells, and causes movements in fixed directions in free-living unicellular organisms.

I have discovered by experiment and practice, the special and specific efficacy in the use of the combination of the caloric rays of the sun, and the electric arc, light in stimulating the glands and cells of the body, the nervous system generally, and the secretive organs of man, and animals. It, therefore, becomes a most important adjunct element in the treatment of acute and chronic diseases, especially such as have become chronic, or result from derangement of secretive, perspiratory or glandular functions, as it vitalizes and gives renewed activity and force to the vital currents that keep the health

unimpaired, or restore them when disordered or deranged. My entire early experience in this line of work was founded on patient experiments upon young and old animals, of several kinds. Since the last five years I employed these different rays of light in the treatment of many forms of tuberculosis and various other forms of diseases. I came to the conclusion that light is one of the most marvellous therapeutic agents yet employed to combat tuberculous conditions. Many experiments could be brought forward to show you how its effects are made visible by comparison; but suffice it to say, that trials by others will prove my work; that it stands upon its own merits.

All these important and pointed phenomena of violet and blue rays led me to test their efficacy upon the human organism for different ailments as I say, and I found that exposure to the rays for an hour or two daily, in all forms of tuberculosis and other forms of lung diseases, in nervous exhaustion, produced from worry, overwork, in weaklings, senile decay, and a host of other diseases, gave excellent account of themselves. A number of experiments were carried out in acute infectious diseases, as in scarlatina, diphtheria, &c., to the power of this light may be credited also much therapeutic value.

I have found the best results were gotten from the violet rays, as generated by coloured glass and concentrated sunlight by means of lenses, or as passed through coloured glass alone, or colored fluid media, produced during the period of the season in this latitude when the sun's rays were strongest, as during May, June, July, August, September, and October. Though, nevertheless, some of my experiments on animals for comparison have shown that the influence of the violet rays were very marked, even when the declination of the sun was such, during a period of comparative feebleness of the force of the actinic or chemical rays. This time was especially selected for experiment for that very reason. It is almost immaterial whether strong electric light is employed or the solar light. Of course, one can always depend on electricity, at all hours of the day and season and so be independent as to its regular employment. We know positively that electric light has similar chemical properties to sunlight; it affects the combination of chlorine and hydrogen, acts chemically on chloride of silver, and can be applied in photography.

Passed through a prism, the electric light, like that of the sun, is decomposed and gives a spectrum. Wollaston, and more especially Fraunhofer, found that the spectrum of the electric light differs from that of other lights, and of sunlight by the presence of several bright lincs. Wheatstone was the first to observe that, by using electrodes of different metals, the spectrum and the lines are modified.

Masson, who experimented upon the light of the electric machine, that of the voltaic one, and that of Ruhmkorf's coil, found the same colours in the electric spectrum but traversed by very brilliant luminous bands of the same shades as that of the colour in which they occur. The number and position of these bands do not depend on the intensity of thc light, but, as we now know, upon the substances between which the voltaic arc is formed.

With carbon, the lines are remarkable for their number and brilliancy; (and this is the regular arc light that I employ) with zinc the spectrum is characterized by a very marked apple green tint; with silver, a very intense green; with lead, a violet tint predominates; and so on with other metals.

Fizeau and Faucult compared the chemical effects of the sun and the electric lights by investigating their action on iodized silver plates. Representing the intensity of the sun's light at mid-day at 1,000, these physicists found that the light from a battery of 46 Benson's elements was 235; while that from one of 80 elements was only 238. The above two experiments have shown that the electric light produced by 50 Benson's cells is about one-fourth as strong as sun light.

Nevertheless, if a powerful arc light is used instead of sun light, and well condensed by suitable lenses, we can obtain sufficient chemical effects, which are very much equal to that of the sun's.

Arguing from all that I have said and all that is known about the blue and violet rays in conjunction with the atmospheric conditions in general, I set out to make practical application of these coloured rays of light as an adjunct to the treatment of tuberculosis, in their various stages of progress, as a prophylactic in supposed early stages, &c. Much to my satisfaction, the practical experimcnts which I have tested in so many different conditions in tuberculosis, these tests have all given good account of themselves in most instances, so that I am very happy to make you acquainted with my re-

sults, as I have found them. I am of the positive belief, from my acquired practical and theoretical knowledge of facts, that the best method to treat tuberculosis and other forms of lung diseases, is in special designed solariums at home or at a sanitarium where violet lights can be generated, according to the requirement of each individual case and specially treated upon principles according to the condition of each case.

From all the reports and researches to the present day by all the expert men in this branch of study, we find but one cry, and but one concert of opinion, for the successful treatment of tuberculosis: hygiene, food, sunlight!

There can be no doubt to every student of this disease, that these facts enter into, as the most important adjuncts, and form the most valuable remedies for the successful treatment of this disease, barring all others, from creosote to anti-toxines. We must look to these factors in the future as our very fundamental principles to rely on, in order to gain a fast hold in the successful battlement against and with tuberculosis. I know full well that there are opinions which will differ from mine, and others who agree with these facts, but, nevertheless, ours are as good as theirs. Since they have done less towards alleviating or curing the disease, even if they have discovered a number of valueless and poisonous anti-toxines and chemicals. I wish it understood that I don't decry the use of remedies by any means; they have their valuable place in the treatment and I use them at the proper time, but, above all, we must not sacrifice the most valuable of them all: sunlight, hygiene, food, climate and electricity. These agents should be considered as the very acme of the fundament for the successful issue of this unconquerable disease. No one can doubt the efficacy of them, or if he does he must be a knave, or a fool.

My apparatus for the generation of violet rays consist of an electric arc search light, so arranged as to throw a beam of violet light upon the chest or back wall of a patient for any length of time.

This method of using coloured light rays makes it practicable of applying these rays of light any hour of the day and regardless of the seasons of the year or climate.

Another apparatus, with which I had much practical experience, is one so arranged for the concentration of sun

rays. It is a double mirror solar arrangement, which reflects a beam of light on a lense, and thus concentrating it, and then passes through a square glass receptacle, containing coloured fluid. Such an apparatus is useful during the seasons of the year when the sun is high or climates where there are many sunny days. This apparatus is fitted into windows having a southern exposure or nearly so. Both these colour ray generator, can be used under any condition desirable. They will be found powerful enough for the purpose for which they have been specially constructed. The illustration herewith show the generators in full operation, from which an idea can be gathered. The mechanical arrangement is of the simplest construction, and a very little practice is necessary for working them in a satisfactory manner.

I use an electric arc search-light, and also an arc projector which have the power of generating from 10,000 to 60,000 candle power. These apparatus will be found very useful in treating one or more patients at one time, as the beam of light is of sufficient power and area which encompasses a large surface. My apparatuses have been constructed for me by Chas. J. Bogue, 213 Centre street, New York City, and The Waite-Bartlett Company, New York City.

These powerful electric arc lights, which are capable of generating from 10,000 to 75,000 candle power, are represented in the illustrations. They were specially built for me from my own designs, to do away with costly lenses, and for the production of the most efficiency of light. The search light is used mostly for casting a large beam of light over a large area. The smaller arc projector is gotten up specially for flooding a certain space selected for treatment. The screens for sifting the light and cutting off heat rays are of different dimensions according to the need. Both apparatuses are arranged for concentrating, focusing and posing to any possible position desired.

# PRELIMINARY REMARKS TO THE DISCUSSION OF TUBERCULOSIS.

BY DR. C. DENISON, OF DENVER, COLORADO.

As fundamental to the consideration of the five subjects for discussion, proposed by the Medico-Legal Society, (especially the second, "The Most Successful Methods of Treatment.") I wish to draw attention to the fact that the basis of judgment at the present time is defective. Unless this is remedied any conclusion will be likewise defective and unsatisfactory. This defect of judgment arises from the premise that the bacillus of tubercle is the sole cause of tuberculosis. Probably ninety per cent. of medical men now living rest their faith in treatment upon this belief. The function of the seed is allowed almost to ignore the condition of the soil as a causative factor in tuberculosis, consequently the origination of the complex disease called consumption is not understood or is practically disregarded. The security which the physician feels in not finding the tuberculosis germ in the sputum is unfortunate and his possible self-deception invalidates his diagnosis. The right which a patient has to a more fundamental regime is denied him, and thus he is made to miss a most important avenue of cure, that of prevention.

The point I want to emphasize is that the matured bacilli do not appear until late in the disease. This latent condition of the germ, or a like effect, is manifest in a denoid tissue and scrofular gland growth.

The demonstration of a blood dyscrasia by reaction in tuberculosis to the Widal typhoid fever test,* is remarkably suggestive of how limited our knowledge of the pertubercular state is. It encourages the hope that new and definite means of diagnosis will be forthcoming, other than the tuberculin test. This latter valuable diagnostic means, however, is quite

* As shown by the experiments of Dr. S. H. von Ruck, described in the October number of the "Journal of Tuberculosis."

Read at session of Medico-Legal Society in joint session with American Congress of Tuberculosis, February 22, 1900. Discussion of Question No. 2.

sufficient to make known these scrofular and other proofs of the tubercular dyscrasia long before there is any occular demonstration of the germ. Therefore, I submit that the subject should be divided; namely: into First, Tuberculosis before microscopic proof of the matured germ, and Second, Tuberculosis after microscopic proof of its existence. Then under such a ruling most all of the "Methods of Treatment" at present in vogue can be relegated to the second division, just named, and with few exceptions are confined to the 2nd and 3rd stages of the disease: because, usually it is only during the breaking down of the tuberculous tissue, i. e. during these two, the softening and excavation stages, that the germ evidence is found. At this period in treatment we are then dealing with results always accompanied by a certain degree of auto-infection. For this advanced condition and its complexities, I hold that the best effects of treatment will, and do come, from a combination of methods, adjusted to the individual's needs.

The Third of the five problems announced "The importance and necessity of individualization" always has to be considered. Individualization helps us to determine the proportion of good to be expected from the various elements of the above combination of treatments.

From my long experience, which I have summed up in my paper on the "Modern Treatment of Tuberculosis,* I claim more than half of the good accomplished results from (1) climate, (2) exercise, and (3) the specific or anti-toxin method. The first and last of this trinity, climate and anti-toxin, I propose to take up when your 4th and 5th subjects are discussed. The argument for the other, "exercise" is set forth in articles† which seem to be so incontrovertible that no opposition has been shown to their general conclusions.

The consideration of tuberculosis before the advent of the mature germ introduces the most fruitful field for investigation, so far as the final eradication of tuberculosis is concerned; for here a cure is possible without leaving the damag-

* Read at the '98 meeting of the A. M. A. in Denver. See Journal, Sept. 21., '98.

† "The Advantages of Physical Education as a Prevention of Disease." Read before the Am. Academy of Medicine, at Denver, June, '98.
"Exercise for Pulmonary Invalids." Congress of Medico-Climatology of World's Fair, June, '93.
"The Air Pressure in an Exhaler," from New York Medical Record, Feb. 10, '94.

ing results characteristic of the arrested second and third stages. If we could only have as convincing proof of the existence of the pretubercular and first stages, as of the second and third stages, and medical men would cease to limit their sphere of action by the meagre knowledge of the bacillary germ, then the way would be open for the much needed prevention. It is unfortunate that our means of diagnosis are as inefficient and limited as they are, yet enough can be known through physical diagnosis, close measurements and individualization, with the tracing of defective genealogy, imperfect functioning, abnormal blood areation and other symptoms of degeneration, to bring to light and within control this insidius disease.

A vital subject which immediately presents itself is: What are the histological changes of the tissues, or the biologic or chemical changes of the body fluids which explain the susceptibility to tubercular infection?

I wish you might urge this question upon the specialists in biology so that after due investigation and on another similar occasion this important matter can be determined.

To recapitulate the chief point here raised is this, the fact that tuberle bacilli are not or cannot be found in expectoration or in adventitious growths, as adenoid glands, is not conclusive proof that tuberculosis does not exist. To conclude otherwise would be practically to ignore the latent or pretubercular and nearly all of the first stage of the disease, the most important period, because then it is curable by preventive measures. The advent of the germ should not, therefore, be the starting point for a tuberculosis congress. As the initiative of tuberculosis then, the germ is a delusive barrier to right judgment and possible prevention. It is more an effect of that degeneration or slow process of death which must be considered as fundamental. Do we have to admit that it is because of our ignorance that the human race is not the ideal one God intended? Yes, it is better to acknowledge that we do not know the cause, than to assume a false basis. Let us give a new definition to consumption.

It is a degeneration or slow death due to the vitiation of the bood, generally produced by defective ventilation of the lungs, a prominent and advanced symptom of which is the bacillary germ of tuberculosis. Now admit this definition and you must

go back to the mortifying stage, to its source, namely: to the dyscrasia which is a *sine-qua-non* of its existence. Evidently this dyscrasia or degeneration is due to some result of our civilization; for the domestication of animals (as the housing of cows) and the civilization (?) of the savage (as of our American Indians) both coincide with our own limitations as to insufficiency of breathing space. Trace down this association of effects to a unified explanation and you arrive at a species of auto-infection, or self-poisoning, due to rebreathing impure air. It matters not whether that admixture of good and bad air is a confined or stove-heated atmosphere, or,more likely, produced in an unventilated lung. The result is the same, namely: a dyscrasia or susceptibility to an additional infection by the bacillary germ. Have perfect pulmonary ventilation, no breathing of impoverished air, and tuberculosis will sink into numerical infrequency. It is almost too great a blessing, this knowing how and what air to breathe, for the human race to attain it yet. The degeneration which is engendered by our ignorance of breathing properly is effectually perpetuated by inheritance. Our difficulties in remedying this dyscrasia or preventing this degeneration are thereby so much increased that I fear it will take years of work by zealous tuberculosis congresses before that education, which must initiate and sustain legislation, will be sufficient to cope with this tuberculosis evil. It was all right for Pasteur to say, "It is in the power of man to cause all parasitic diseases to disappear from the world," but the eradication of the bacillus of tubercle will not come through the superficial legislation that simply seeks to control (?) expectoration or limit infection from animals. No, the education we need, which alone can be the basis of right legislation, must be more fundamental. The importance of physical development as a basis of health, incorporated into our education and lives is not duly appreciated. If we only knew how and what air our Creator intended us to breathe, and then acted on that knowledge, there would be very little pulmonary consumption hereafter.

The tendency of people to concentrate in cities, and the faulty architecture of our homes and public buildings, are important subjects yet to be duly considered.

These are a few of the thoughts which lead to the denial of the position, believed in by the mass of medical men, that

bacillus of tubercle is the sole cause of tuberculosis. The question then is a legitimate one: Would we not reach desirable prevention sooner by considering that germ a result rather than a cause?

But there is another even larger subject which, it seems to me, it is the special function of a Medico-Legal Society to elucidate. This investigation is intimately associated with that named above and is one of, if not the most vital of the problems of this tuberculosis crusade.*

It is nearly comprehended in the following: What are the legislative and educational provisions possible, to suitably change the prevalent degeneration, and its heredity, which now dwarfs civilization and favors tuberculosis?

This is the theme of themes for collective minds to settle. Not a congress or legislative body anywhere, but can gain inspiration from it. Not a university, college, seminary, academy or even a common school, but can be instructed by it. Not a labor or religious organization, not a factory or work shop on this round world, but will feel the radiance of the light which may eminate from its solution. Let the usual counterbalancing of judgment by judgment, the simple putting on of record of diverse personal opinions and experiences, not by the limit of the achievements of this congress, as has too often been the case with other similar discussions of this tuberculosis question. Let this body here take the initiative to inaugurate a future discussion of this basis or determining theme. Thus let us hope the way will be open for the required restrictive marriage and social laws, the incorporation of physical development into every educational and wage-earning phase of life, so that this tuberculosis crusade may be crowned with success.

* "The Tuberculosis Crusade and its Problems," by the author, giving 44 necessary subjects to be elucidated. Journal of Tuberculosis, Oct., '99.

# REPORT ON THE WORK OF THE MARINE HOSPITAL SERVICE AT FORT STANTON, NEW MEXICO.

BY PAST ASSISTANT SURGEON R. J. ROSENAU, M. D., OF THE MARINE HOSPITAL SERVICE, WASHINGTON, D. C.

The forecastle is the worst and the best place in the world for tuberculosis; it is the worst place for the sick and the best place for the well to take the disease. The dempness and darkness of the ordinary sailor's forecastle, added to the dirt and overcrowding, not only tends to diminish the vitality of its occupants but favors infection. The tubercle bacillus wants just such a place to dry out and fly about in the dust without losing its virulence.

You will, therefore, not be surprised to learn of the widespread prevalence of the disease among sailors. An occupation which could be made one of the most healthful, is, as a matter of fact, so arduous that only the vigorous and robust can withstand its hardships. These hardships are not alone exposure to wind and weather and long hours of toil, but quarters which any Board of Health would condemn were they to exist on land.

The Marine-Hospital Service furnishes medical attendance to the entire merchant marine of the United States. It has a clientele of about 100,000, and treats annually over 50,000 cases of disease—all sailors from American vessels. Of the total number of deaths which occur annually among these patients, taking the average for ten years, one-fourth, or 25 per cent., are from tuberculosis, many times exceeding the death rate from any other single disease. In other words, the Marine-Hospital Service has from eight hundred to twelve hundred cases of tuberculosis to treat annually. It is stated that seven out of every one hundred, or seven per cent. of the deaths in the United States, are caused by tuberculosis. It will, therefore, be seen that the death rate among sailors from this disease is about 3½ times the average.

Read before the Medico Legal Society in joint session with Congress of Tuberculosis, February 22, 1900.

It is a well-known fact to the officers of the Marine Hospital Service that tuberculosis is the most discouraging disease to treat in a sailor as long as he follows the sea. A sea voyage which may benefit a traveler will almost inevitably terminate fatally for the hand before the mast, compelled to eat poor and unsuitable food and exposed for long hours to the perils of the sea.

The Marine-Hospital Service is over one hundred years old, for a long time treated cases of tuberculosis at its various hospitals in the general wards with other patients. After the discovery of the specific cause of the disease, tuberculosis patients were properly isolated in separated wards and all the known precautions taken to prevent the spread of the disease. The results under this plan were not good. A few cases recovered which seems to be the natural tendency of the disease. In a number of cases life was prolonged or the course of the disease arrested, but, in the main, the cases did poorly and it is no wonder that officers of the service stationed at reservations on the Great Lakes and the North Atlantic seaboard desired to send their tubercular cases to warmer and more congenial climates.

Surgeon-General Walter Wyman was, however, the first to crystallize this idea into a suitable open air sanitarium for consumptive sailors about twenty years ago, when he endeavored to interest the delegate in Congress from New Mexico in the establishment of a sanitary ranch in the arid region of that Territory. Little, however, was done until he became Surgeon-General.

Among other officers of the service who have written and studied in the same line are Doctors J. O. Cobb and W. D. Bratton. The latter himself contracted the disease from his patients, and going to New Mexico to regain his health, was directed by the Surgeon-General to prepare a report on the beneficial effect of the New Mexico climate on consumptives, and to examine all government property in the territory with a view to securing a suitable place for a Service sanatorium.

He made an exhaustive report in favor of the climate and the establishment of a sanatorium. Subsequently the Secretary of the Treasury, Hon. L. J. Gage, authorized the detail of an officer of the Marine-Hospital Service to examine the various abandoned military reservations in this arid region, and report on their suitability for the purpose. Passed Assistant

Surgeon Cobb was detailed, and after examining many places reported Fort Stanton as the most suitable.

By Executive order of April 1, 1899, President McKinley transferred this reservation to the Marine-Hospital Service, and the buildings were rapidly repaired, and patients are now being cared for there.

Passed Assistant Surgeon G. T. Vaughan of the Marine-Hospital Service gives the following description of our reservation:

*Fort Stanton, an abandoned military post, is situated near the Rocky Mountains in Lincoln County, Territory of New Mexico, in latitude 33 degrees 29 seconds 27 miuntes, N. and longitude 105 degrees 28 seconds 19 minutes W. The reservation consists of about 10,240 acres, 8 miles long and 2 miles broad, lying on both sides of Rio Bonito, which flows into the Rio Pecos, a tributary of the Rio Grande. It is located in the arid region of the United States 1400 miles from the Atlantic, 750 miles from the Pacific ocean and 600 miles from the Gulf of Mexico. The air line distance from Washigton is about 1800 miles, from New York 1900 miles, from Chicago 1200 miles and from San Francisco, 1000 miles. The nearest railway station was at Roswell, New Mexico, on the Pecos Valley Railroad, 25 miles distant, but on the first of August the El Paso and Northeastern Railroad ran a branch into Salado, New Mexico, only 6 miles from Fort Stanton, and about 150 miles from El Paso.

### Climate and Topography.

It is generally agreed that an elevated region with a warm, dry and equable climate, is best for consumptives, and Fort Stanton probably comes nearer to filling all these requirements than any other locality in the United States. The altitudes may be a little too great, especially for advanced cases. Should this prove to be true, a second sanatorium for the treatment of these cases will probably be established in a region of lower elevation.

The average temperature for the year is about (55 degrees F.), 12, 8 degrees C.; (93 degrees F.), 34 degrees C. maximum. It has run as low as (5 degrees F.), 15 degrees C.; but this is very rare. It sometimes snows, but the snow does not re-

*Sonder-Abdruck aus dem Bericht über den Kongress zur Bekämpfung der Tuberkulose als Volkskrankheit, Berlin, 24. bis 27 Mai, 1890.

main long. Fire for heating and winter clothing are needed about 3 months in the year.

The rainfall is about 20 inches. The average number of clear days or with slight cloudiness is over 300.

The elevation above the sea level is 6151 feet. The country is rolling and hilly, gradually extending into the mountains, is covered with grass, alfalfa, which makes excellent grazing for sheep, goats and cattle. Higher up is the timber belt, covered with lofty pine, spruce, fir, and cottonwood trees, furnishing abundant material for lumber and firewood.

A few miles above the fort the waters of the Rio Bonito abound in trout. With irrigation, which is already used to some extent, and can be provided on a large scale without great expense, all ordinary vegetables, except potatoes and onions, can be raised. The finest fruits grow in and around the reservation.

### Water Supply.

This is obtained from an artesian well 265 feet deep, with a capacity of 15,000 gallons in 12 hours. The water is pumped into a reservoir, whence it passes through iron pipes to the various buildings.

### Sewerage.

This is only partial, the drainage being chiefly by acequias (irrigation canals).

### Soil.

The geological formation exhibits outcroppings of new red sandstone and magnesian limestone.

The soil is a black, alluvial, alkaline deposit, exceedingly rich, with a subsoil of gravel and volcanic stone. Coal fields are found five miles distant, and gold in small quantity, in the Ficarillo Mountains about 30 miles distant.

### Heating.

This is done by means of wood burned in stoves and open fire places. It is probable that coal from the mines of Salado, 6 miles distant, can soon be obtained in abundance.

Cases of tuberculosis may now therefore be sent from any of the 20 Marine Hospitals and 120 relief stations, located on the Atlantic, the Pacific, the Gulf of Mexico, and the Great Lakes and rivers of the United States at Government expense to the Fort Stanton Sanitary Ranch for treatment, where they will not only have the benefit of the climate and modes

of treatment, but the most advanced scientific methods of a medical nature from the physicians and bacteriologists selected on account of their special fitness for this duty.

The Surgeon General hopes to enforce a regulation requiring the examination of all sailors before shipping, by which means cases of tuberculosis may be detected, thus giving the best chances of recovery by treating the disease in its incipiency and preventing the danger of communicating the disease to other sailors by reason of their close and intimate association on ship board.

The Surgeon-General has in mind not to allow the consumptive patients at the Fort Stanton Sanitary Ranch to simply sit idle with nothing to do but to reflect upon his disease, but he hopes to give employment to all able to do work of any outdoor character—with the double purpose of diverting their minds and aiding towards the support of the institution.

Some cases, of course, require absolute rest,and employment or rest is afforded as may be most suitable in the opinion of the medical officer in charge.

The reservation being so great, 16 square miles, will permit of sheep and cattle raising and the tending of these will give healthful employment to a number of patients. Light gardening and the raising of crops will also be undertaken.

The surrounding country is mostly public lands which when irrigated can be easily tilled, and it is thought that patients who have improved or recovered may take up a section or engage in the employ of others who have settled in the neighborhood, thus helping to settle at present an unsettled district.

The Fort Stanton sanatory ranch therefore already fulfills one of the objects for which it was established, viz., the isolation of the tubercular sailor, so that the other inhabitants of the marine hospitals are no longer exposed to dangers from this source. It also gives the consumptive sailor the best of fighting chance known to get well.

But this is only part of a general plan proposed by the Surgeon General to isolate all consumptive sailors by examining them before shipping, and by systematic disinfection of the forecastles—thereby checking one of the favorite hiding and breeding places of this dread disease.

# SANITARIUMS AND CLIMATIC CONDITIONS FOR THE TUBERCULOUS.

BY W. S. WATSON, M. D., SUPERINTENDENT OF RIVERVIEW SANITARIUM, FISHKILL-ON-THE-HUDSON, N. Y.

I am very much interested in the paper which has just been read by Dr. Bleyer. I feel that he must be congratulated on the efforts he has made in this direction. I have been watching him with considerable interest for some years, and I feel and believe that he is doing a good work.

I have done a little along the same line myself, but not in the way he has shown us tonight. I have been using colored light by the aid of the sun's rays, using blue, orange and red, etc. I am confident there is a great deal in it, not only in the treatment of tuberculosis, but I believe it is going to do wonders, and that we are just on the eve of some wonderful discoveries in that direction.

With reference to the construction of sanitariums for the management of the tuberculous class of patients, in my mind, this is a matter that ought to be taken into consideration. The building of such structures without any regard to geting the effect of light, (the sun-light) and the different colored light effects is a serious mistake; the construction of sanitariums without carefully considering these points in the treatment of consumption is radically wrong. I do not think we are sufficiently impressed with the advantages to be derived from sun light, nor in having such structures situated or located where one can get the sun light, and when that cannot be obtained, the advantage of arc-light, at least.

Dr. Bleyer told us in his admirable paper of the pressing necessity for homes or sanitariums for the care and treatment of the consumptive and of the advantages of certain colored lights, he also touched upon plans of their construction, to all of which we heartily agree. As to the effect of the violet

Read before the Medico-Legal Society in joint session with the American Congress of Tuberculosis, February 21, 1900. Discussion of first question.

or other rays upon the tuberculosis bacilla we are as yet unable to say anything definite. If we were positively certain that Dr. Bleyer or any one else had found a positive means of destroying the bacilla, we would say, well done, let us have a united effort to get our consumptive class in sanitariums near us where such means can best be used. While there remains a doubt as to the practicability and curative action of colored sun or electric rays, we believe it wise and proper to turn our attention to the best possible climatic conditions for the consumptive since a climate favorable to long life is the one thing sought by man. The question is where can I go to prolong my chances of life, suffer least and get the most enjoyment out of the time allotted me? Thousands are asking themselves those questions, the consumptive more than any other, since consumption is the greatest scourge of the human race. Among civilized people nearly one-tenth of the population and so far as we know there is no country entirely free from its ravages. In Iceland the disease is rare, while in the West Indies it is of common occurrence. This shows that heat is not a preventitive and that cold does not necessarily produce it. That medicines are of but little if any use can scarcely be doubted. Cod liver oil and immunitized serum are of doubted value, climate is the one thing most promising at present.

I will say that I am not favorable to a cold climate for a sick man, especially is a low temperature detrimental to the consumptive, notwithstanding there are strong advocates of the north, as the Adirondacks. I believe this positively wrong; we will admit that many cases are braced up for a time in a vigorous, cold climate, the electro-positive conditions tend to make the depressed and jaded person feel better, but it is absurd, to my mind, to send a person suffering from consumption into a cold climate as he is of necessity a person with impoverished blood and enfeebled circulation, to place him where he must be shut up indoors, week in and week out and expect any lasting results for good is beyond our comprehension. We will concede many try and are much of the time out in the cold air of the northern resorts, the physician often insisting that it is positively necessary to remain out. We agree that outdoor air is necessary, but more die in the attempt than get any lasting benefit from such ventures, and the sooner the general public understand the unreasonableness of such doctrines, the better for the unfortunates. While we do not ap-

prove of cold, high altitudes and extreme changes, we also do not see a fitness, in warm, humid climates for the consumptives. We have sent many cases of consumption to Georgia and South Carolina in years gone by, also to Florida. In a few instances they have been benefitted, but more frequently returned under advice of the undertaker; if not under the undertaker's immediate advice he claimed them a little later.

Akin, Summerville and Thomasville, all of which are admirable climates in comparison with Central or Northern New York to live in and for the most part the comfort of the consumptive during winter months, but the variations of climate is even there too marked, changes are too abrupt to be what is desired, the pine forests are no doubt beneficial and soothing by reason of the ozone and the sweet resinous odors of pine, especially is this true of bronchial troubles. The middle Southern States are better fitted to the nervous class than the consumptive.

The chief points of importance of climatic conditions, are first, what are the probable conditions that are most favorable to non-development, retardation or cure of the consumptive.

The first is dryness of air, freedom from micro-organisms, irritants and noxious gases, the largest amount of sunlight practicable, diminished barometric pressure, ozoniferous atmosphere. Chief of all a climate that admits of an outdoor life the largest possible amount of time, believing that outdoor life is positively essential and that an indoor life is positively destructive, and hastens to an untimely end. We are sure that high altitudes in a Southern latitude are the only safe resort and afford the advantages enumerated. Our understanding and observations are such that we believe that portions of the Republic of Mexico, the high table-lands at an elevation of from 3,000 to 5,000 feet above the sea level, offer more and better advantages than any other country, perhaps, in the world.

When all is considered, Mexico has climatic conditions suited to almost any possible condition that can exist; temperature and barometric pressure depending entirely upon elevation, as does also humidity and dryness there. In her high altitudes there is a positive freedom from sudden changes of extreme character by reason of the lofty and continuous mountain ranges that surround the plateau lands of the Re-

public, which is not a feature of any other country in the world, to our knowledge.

Various countries have the desired land elevation, but do not have the mountain protection, consequently do not have the eveness of temperature required for an outdoor life of the invalid or a consumptive. In most of the mountain resorts of the world there are one or more serious objections to our recommending them as a constant home or even a temporary resort.

In northern climes, the extreme low temperature is inconsistent with outdoor life, a large share of the time, which of itself is a serious objection. The day is near at hand when no medical men can conscientiously advise cold climate for an invalid, much less the consumptive. Another objection to high altitudes in northern climates is the sudden fall of temperature, a thing that must not be encountered by an enfeebled constitution, if it would do well. We wish to repeat that a low, humid, hot country is equally detrimental or nearly so, to that of a cold, frigid one, for the consumptive. Portions of Mexico and New Mexico are certainly well adapted to certain classes of nervous cases and pulmonary conditions. Why? By reason of the high altitude that may be obtained, the air being aseptic, free from dust, irritation and low forms of organism or microbes, and by reason of rapid evaporation of morbid secretions in the lungs which is promoted by the reduced barometric pressure and the dryness of the air at the elevations named, and by the increased oxidation of the blood and tissue changes which are due to increased metabolism, largely dependent on the sun light of these high altitudes.

In high altitudes there is an increased frequency and freedom of the blood circulating through the lungs, hence increased metabolism and consequent tissue changes.

The increased activity and deep breathing attendant upon a life in high altitudes tend to improve nutrition.

Along with the local and general nutritional effects that are manifest from a stay in the high altitudes of Mexico, are the delightful stimulating effects upon the nervous system.

Still another noticable feature, one much to be desired, is the increase of red blood corpuscles and hemoglobin. Such blood changes are unquestionably due to the increased amounts of oxygen inspired in these high altitudes. Anemic conditions rapidly disappear in the sunlight of Mexico's high

altitudes; rapid and remarkable improvement in the local and general conditions are coincident with the blood changes, in the consumptive that are transported from the sea level to altitudes of three or more thousand feet; this has been demonstrated by numerous careful observations in Europe, North and South America.

So far we believe the only successful means of combating tuberculosis, is by increasing the resisting powers of the system. Outdoor life in a mild, dry, climate, where the general health can be kept to the highest possible standard, offers certainly the best possible advantage and the longest immunity.

The climate of the high lands of Mexico certainly offers all that can be desired in point of climate.

I wish in calling attention to Mexico as a natural sanitarium, or portions of it, to add that the Republic of Mexico is a much misunderstood country; although near us, it has seemed to be a far off land, without merit, beauty, or other attraction; its inhabitants a people who are strangers to hospitality, who live within and for themselves, whose prejudices are so deeply rooted by reason of never to be forgotten unpleasantness, that cost them many lives and much territory, notwithstanding the United States after giving them the desperate whipping they did, and afterwards offering an apology for the act by paying them for the lands they had lost, has not wholly healed over the wound, and even now each and every Mexican feels called upon to see how unpleasant he can make it for a would be settler from the United States.

Such we are happy to say is not the case, but is a misconception. A more liberal, hospitable people are not to be found. Instead of repelling, they invite you to come; they ask that Mexico be better known; they seek investigation of their great country, the advantages of climates, etc.

# CAMP AND OUT DOOR LIFE AS AN AID TO THE PERMANENT CURE OF TUBERCULOSIS.

BY THOS BASSETT KEYES, M. D , OF CHICAGO.

It is now conceded by many, both physician and layman, that hospital and sanitarium life for the treatment of consumption is a failure. Indoor life and treatment must now give way to out door camp and tent life.

It is now generally recognized and advocated by all physicians that outdoor life is the ideal one for the consumptive. Dr. P. H. Bryce, Deputy Registar General of Toronto, Canada, (the Canadian North West and Rocky Mt. Districts in the Treatment of Tuberculosis, Canad. Med. & Surg., 1896) says that "perhaps nothing has grown into such favor in the treatment of tuberculosis as the so-called air cure." Dr. Ransome in his excellent prize paper (Researches on Tuberculosis, 1898, London,) goes on to detail experiments which prove that fresh air, sunlight, and dryness of soil are inimical to consumption. He has nothing but praise for the open air treatment. Dr. Futcher, in his article (The Open Air Treatment of Tuberculosis, Phila. Med. Jour. 1899-II-1025,) says "The open air treatment of tuberculosis is now generally accepted as the one that has given the best results in the treatment of and in resisting the onset of this dread disease." Outdoor life has found great favor, especially among the European physicians, in Germany and Switzerland, where the cottage plan is in operation at several places.

The greater prevalence of tuberculosis in crowded cities and unventilated dwellings shows that these conditions are favorable to the increase and virulence of the specific bacillus, and it is also plainly evident that the disease pursues a more rapid course in large cities. Of all occupations those who lead outdoor life are less subject to the disease. These statistics prove that the agriculturalist is less subject to the disease than any

Read at Congress of Tuberculosis, before Medico-Legal Society, on February 22, 1900. Opening paper on Question No. 2.

other person; on the other hand those who are engaged inside in dusty work ,and where there is poor ventilation, such as those who work on cloth, printers, etc., are more frequently the victims of this dread disease.

That the city is not the place for the consumptive is proven by all post-mortem examinations of the lung tissue, for in those who reside in the city or large towns, the lungs are found of a darker color, discolored from particles of smoke and carbon which has been breathed into the lungs, while the examination of the lung tissue of those who have resided in rural districts is found free from carbon and of a more pinkish, healthy color.

Proof that indoor life leads to tuberculosis is found in the well known fact that wild animals do not stand domestication and confinement,but die of tuberculosis. In Lincoln Park Museum, Chicago, I am told by the head animal keeper, C. W. McKeran, who has perhaps had a larger experience in the rearing and care of wild animals, than any other man in America, that nearly all wild animals in the museums, come to their death from tuberculosis, and that rickets and other tubercular diseases, is the reason why most of the young ones die within a few weeks after birth. On the other hand wild animals in a state of nature escape this dread disease It is also well known that western cattle allowed to roam are not as subject to tuberculosis as those which are confined in barns, but that the disease is very frequent when the cattle are housed. The same fact applies to calves, for it has been noticed that calves descended from herds known to be tubercular, do not have the disease until confined in barns and sheds when they are very apt to take on the disease. That tuberculosis was due solely to confinement was not probable, as dry food stuffs which are fed to cattle are less nutritious and harder to digest, but that it was a principal factor it is evident.

We, as Americans, are living in homes, many of which are at times impoverished for pure air. These homes are artificially warmed by steam, furnace or stoves. The disadvantage of the first two being improper ventilation and of the latter while a large stove is capable of giving ventilation, it consumes a great deal of oxygen, an element so much needed by the system.

It has been demonstrated by experience that no amount of exposure to draft, cold, or wet, or any change in the weather will cause the weakest patient to catch cold so long as life in the open air is led. In camp life the patient is allowed to go out in the open air, or to sit with bare head in the sun. Each pa-

tient should have his own tent, which should be placed over a well made platform of matched boards. In each tent there is a camp stove to maintain the proper degree of warmth. Only one patient should be allowed to sleep in a tent. Patients who are accompanied by friends necessarily have separate tents. Centrally there should be a large dining hall well made and divided into several rooms. Here the patients are supplied with proper prescribed meals. Each patient being under the personal care of a physician, such diet as indicated is given. The food prescribed should be rich in nutrition, and each patient over-fed, food being given in much larger quantities than the patient's appetite demands. For some patients special meals are given. Meals should generally include large quantities of milk from a selected herd, an abundance of fatty and farinaceous food, and moderate quantities of meat, also game and fish in abundance. Patients should be required to rest an hour before meals and an hour after each meal. The meals should be served at regular hours, viz: 8 a. m., 12 m. and 7 p. m.

What is called the treatment house should also be centrally located, and this consists of two large treatment rooms on the first floor and well ventilated pleasant rooms on the second floor, for the use of patients in case they should require more personal attention.

Each patient should be treated according to his special needs. In the first place patients generally suffer from catarrh of the stomach, and the best means to cure this is to wash out and irrigate the stomach thoroughly, using a double flow tube. This also by the action of the diaphragm and the muscles of the chest clears the lungs. In some cases I use hot-air conveyed into the stomach, through a stomach tube from a special devised heat generator.

In the treatment of tuberculosis I consider the following steps of the greatest importance.

1. Irrigation of the stomach to cure catarrh and to stimulate the pneumogastric nerve, and to promote digestion, and assimulation.

2. The correction of all abnormal conditions about the nose and throat.

3. Outdoor life and proper exercise.

4. A system of overfeeding together with proper tonics.

5. Careful watchful supervision by the physician, to meet demands as they may arise.

There are many other adjuncts useful to the treatment of tuberculosis, which in a paper of this kind need not be mentioned, but of these let me call your attention to static electricity and ozone.

For this purpose a large static machine is used, to generate the ozone. A stock of all necessary drugs for the treatment of tuberculosis, and for conditions that might arise, particularly reconstructives, tonics and cod-liver oil and preparations of that kind together with preparations as pepto-mangan, etc., should be at hand in the camp.

X-Ray examinations of the patient's chest should be made once monthly and the improvement noted.

With this method of treatment patients gain rapidly in weight, averaging from 3 to 6 pounds during the first few weeks. Some patients gain 40 to 60 pounds, and it is not uncommon for them to gain 1-4 to 1-3 of their entire weight. The anemic patient becomes robust and muscular. The regular exercise develops muscle and the pleasant surroundings occupies the mind. The patient fishes and hunts, and with gun, rod and camera goes through a regular system of exercise Women are as fond of the outing as are the men.

By outdoor life the patient becomes strong and hardened to resist the atmospheric changes in temperature and weather, so that when they return to their city homes they have become robust and are not affected. By this treatment it is sought to maintain a permament cure.

To select a proper site for a camp naturally one in a warm climate for winter, and one in a northern state for summer will best meet the needs of the patient. The climate in Northern Wisconsin during the summer months is particularly suited to the consumptive and those of weak lungs. Statistics show this to be the most healthful summer climate in the United States, the great timber belt of the state, of which a large proportion is covered with balsam woods, including pine, hemlock, cedar, spruce and tamarack. It is well known among health seekers for its invigorating climate and generally healthful surroundings. One feels a difference at once in traveling from the southern part of the state, or from other states, as soon as he enters what is known as the pine belt of Upper Wisconsin. This section is also a sportsman's paradise, which, with its heavy forests and myriad lakes, offer opportunities for the hunter and fisherman which are unexcelled anywhere in the western country.

The camp should be located where the soil is naturally dry and in such a position that the slope of the land will keep it well drained, so that the injurious effects of dampness will not be felt, and so that there will be no oscillations of underlying subsoil water. There should be plenty of sunlight, and movement of air. The advantage of sunlight to the consumptive patient is well known. It produces an haematonic effect. Perhaps the best location is found in the large pine belts of the North and South, as here there is plenty of ozone and a healing extract of pine seems to prevail in the air.

The tents should be large and of the heaviest of duck, placed well apart and built upon hardwood platforms, which should be varnished. The dining hall must be supplied with a plenteous table and everything of the very best.

The strictest sanitary conditions must be carried out. Each patient is impressed with the necessity of hygiene, he is not allowed to expectorate on the premises, but he is supplied with a Dettweiller pocket flask and the sputum is burned. Each patient acts as a special police, and should one be found to expectorate on the premises he is reported by another, but each patient is always faithful to his duty. In fact the patient must be under the supervision and well regulated care of the physician, for it is the experience of everyone who has visited the numerous resorts that little permanent good has been obtained unless under the supervision and treatment of a physician.

Under the strictest sanitary conditions, that in every way meet the severest test and demands of hygiene, and bringing into play everything that is elevating and stimulating, by using every means known to modern science as useful in the treatment of tuberculosis, and by a diet suitable to the purpose, then camp life is the ideal one for the comsumptive for these reasons:

1. It is inexpensive compared with hospital treatment.

2. It encourages exercise, producing much muscular development and a healthy appetite.

3. It affords pleasure and amusement (not afforded by indoor or Sanitarium life) and removes the patient from home surroundings with their many injurious influences, and consequences, both to patients and friends, into a healthy virgin district.

4. It toughens and makes the patient robust and thus helps to maintain a permanent cure.

# WHAT ARE THE MOST SUCCESSFUL METHODS OF TREATMENT?

BY DR. KARL VON RUCK, OF ASHEVILLE, N. C.

Gentlemen:—The opening paper on "Camp and out of Door Life as an Aid to the Permanent Cure of Tuberculosis," contains the remarkable preamble that "It is now conceded by many, both physicians and laymen, that hospital and sanitarium life for the treatment of consumption is a failure. Indoor life and treatment must now give way to out door camp and tent life."

This statement is the more remarkable at this American Congress for tuberculosis, when only eight months ago the Tuberculosis Congress in Berlin assembled for the chief purpose of giving aid and influence to the movement of establishing sanitaria for the consumptive middle classes and the poor; in full recognition of the excellent work heretofore accomplished by both private and public institutions, especially designed and conducted for the treatment of tubercular patients.

The author of this statement seems to labor under, or to convey, the impression that in Sanitaria for Consumptives the patients are confined to their rooms, and are actually deprived of the advantages and benefits from the open air treatment.

To correct such a misapprehension I desire to remind the distinguished author that proper "open air treatment" had its origin with special sanitaria for consumptives, and although change of climate was a recognized aid in the treatment of consumption centuries ago, the credit for systematic climatic treatment, or open air treatment, as a valuable therapeutic measure, and as now recognized by the foremost men in the profession and by the leading phthiso-therapists of all countries, belongs to the father of Phthiso-therapy, Dr. Herman Brehmer, and to his distinguished pupil, Dr. Dettweiler, the

Read before the Medico-Legal Society in joint session with the American Congress of Tuberculosis, February 22, 1900. Discussion of second question.

former respective heads of the Sanitaria for Consumptives in Goerbersdorf and Falkenstein.

Without considering the universally acknowledged lack of facilities of general city hospitals for the proper care of phthisical patients, I may say, that this lack lies chiefly in the want of open country, spacious grounds, piazza room for out of door life, and a sanitarium that lacks these facilities and does not take advantage of them, can not be spoken of as a sanitarium for the class of patients under consideration.

The evidence which the author adduces, as to the predisposition of those who lead an indoor life or who follow dusty, indoor occupations does, however, not necessarily prove that the out of door life is all that is necessary for the cure of tuberculosis, and for the difference in predisposition between an office clerk or a factory hand, and a farmer, we must also take account of the difference of exposure to infection. What applies to the mode of life in close confinement of men, applies equally well to domestic as compared with wild animals.

It would be folly and a wasting of words to controvert the fact that an out of door life, free from unreasonable hardship or exposure, is conducive to the best physical vigor, and climatic treatment of tuberculosis whether carried out in a special sanitarium of modern construction and with necessary comforts and conveniences, under a proper hygienic and diatetic regimen, or in a camp of tents as the author advocates, has this and this only for its object.

As to the preference for the well equipped sanitaria to the camp of tents and vice versa, there may be a difference of opinion, but having never conducted such a camp sanitarium myself, I can only mention my misgivings, and if I am wrong, I shall be grateful to be corrected. The only advantage that I can now see for the camp of tents over the modern sanitarium is the cost of construction and maintenance, but this is largely offset by other considerations which appear to me quite valid.

Of my misgivings I may mention the want or difficulty of obtaining a proper and unfailing supply of necessary stores and provisions, especially of abundance of fresh meats, milk, cream and butter, and if these are available from a distance, then arises the difficulty of proper facilities and conveniences for their keeping, especially in warm weather.

The difficulty of keeping the camp in a perfectly sanitary condition.

The danger of contracting colds, and catarrh especially to weakly and delicate patients and even to those still of fair vigor, when an abrupt change is first made.

The difficulties that must arise in the management and dietary of cases having active symptoms and complications.

The necessity of shifting the camp a long distance for different seasons of the year.

But, granting that all these disadvantages are overcome, I see no material gain in other directions. A well constructed and properly equipped institution, located in a favorable climate, can carry out the climatic treatment every day in the year, it has facilities to do this in the coldest weather, in rain, wind or sunshine.

Patients who seek recovery from phthisis are, as a rule, sick. They often have fever, and night sweats, poor appetites, and impaired digestion, they have frequently been confined to their houses, rooms or bed for considerable periods before they seek climatic and other appropriate treatment, and it would seem to me to be a badly chosen time, to start out in the camp and tent life at such a stage of their illness.

A special institution can bring about the change in a more gradual and safer manner, and can afford its advantages to cases having acute processes, in the treatment of which the comforts and conveniences of a modern building are indispensable.

It is not only in the tent of a camp that patients can have all the out of door life that they need for their best interests, and the same is true of proper rest and exercise. The only difference of also sleeping in a tent instead of in a comfortable room, well lighted and ventilated, seems to me in favor of the latter. At any rate sleeping in a tent is not a requisite to the maintenance of the best of health nor to its recovery when it has been lost, and apart from this, a good sanitarium for tubercular patients affords everything else and more than the camp could supply. Moreover, it could easily provide the tent also for selected cases if there were any good reason for having it.

I cannot but agree with the author as to the neccessity of constant professional care and control of phthisical patients, and of strict individualization for each case. I doubt, however

the utility of over-feeding so long as the patient takes all the nourishment that he can possibly digest and assimilate.

Such efforts have usually proved dismal failures, and a better way, in my own practice has been found, in the removal of the anorexia, if it exists, by giving due attention to its cause.

Patients who are free from fever and from disorders of the digestive organs, and who avoid excesses in drink and food, usually maintain a good appetite and gain in weight and strength if their general care and treatment are correct. The only tonics that they usually need is plentiful fresh air and sunshine, good food, sound sleep and the proper amount of rest and exercise which is requisite or permissible for the individual case.

But with all these advantages, pulmonary tuberculosis is not so readily cured as is frequently supposed, and while the fever may disappear, and the cough may subside; while the patient may have regained his strength and consider himself well, he often abandons the required regimen too soon.

If at such a time we apply a tuberculin test, we usually find that the supposed cure is after all only the advent of a latent stage.

If such a patient return to his former home, the out of door life is likely to be given up, or greatly restricted. Resuming his former social and other cares and responsibilities, especially under less favorable climatic conditions, he soon begins to lose ground, and after a few months more, he is liable to be where he started the year before.

To obtain permanent results means to give nature an opportunity to cause fibroid transformations of recent and the effectual encapsuling of older or caseous tubercular deposits, and for the healing and cicatrization of open cavities. This is not accomplished by a short season of camp life, nor by open air treatment even in an institution, and such a result must not be assumed, because the general health has been restored, or the general symptoms have for the time disappeared.

To pronounce a patient actually cured of his tuberculosis. he must not respond to a full test dose of tubercle toxins, and to accept the ulcerative phthisical processes as healed and cicatrized, there must have passed at least a number of months during which the physical examination in the absence of cough and expectoration justified such an assumption.

Under climatic treatment alone quite a number of years are often required for the complete encapsuling and obliteration of the present lesions, and before this is accomplished incidental inflammations in the lungs from colds, grippe, pneumonia, etc., may again change the latent process into one of ulcerative phthisis.

# EXTERMINATION OF THE HUMAN RACE BY TUBERCULOSIS; ITS CAUSES, ITS EFFECTS, ITS PREVENTION, AND CURE.

BY FRANCISQUE CROTTE, A. M., PH. D., OF PARIS, TRANSLATED FROM THE FRENCH BY DR. F T. LABADIE.

It is scarcely 50 years since tuberculosis is really known, that is to say that it has taken a development and is spreading with alarming proportions. To look at the statistics in Europe is enough to give us a shudder when we see that in England, especially in London, about 75 per cent. of the population are suffering from this terrible scourge; in Russia 40 per cent., in Germany about 35 to 40 per cent., in France 30 to 40 per cent., in Italy and Spain 35 to 40 per cent., and in America 50 per cent. The countries near the North Pole are the only ones almost safe from this disease, and there are even some northern countries where this modern plague is unknown.

This disease has only lately been better known—more especially since the time of Pasteur and since Koch has discovered the bacillus. The ancients used to call it "the disease of languor."

This scourge making its ravages, increases every day, and threatens even to extinguish the human race, very rapidly. In nearly every family there is one or several victims, and if half of humanity is contaminated, the other half is trembling and does not know how to protect itself against the invading plague.

The causes of tuberculosis are numerous and they can not even be determined. Somewhat of a mystery surrounds it. Today it is a man strong and vigorous who, according to appearances, would live many years, who is taken suddenly with hemoptysy, night sweats, fever, etc., and shortly develops all signs of hasty consumption; nothing can stop the disease which leads him to death. It is a surprise to everybody and

Read before the Medico-Legal Society in joint session with the American Congress of Tuberculosis, February 22, 1900. Discussion of first and second questions.

the question is raised how it was possible this strong man could have succumbed to tuberculosis.

It is believed that only sickly and anaemic persons may suffer from this malady. This is an error. Anyone may be subject to it.

Another time, it is a child born tuberculous, and yet his parents have good constitutions and are in good health.

Finally, and most frequently, tuberculosis is insidious and the patient passes through the three degrees without much suffering, hardly knowing that by expectorating day by day the substance of his lungs is thus constantly diminishing. He contaminates his relatives and friends, and as a last resource he is sent to another climate only to contaminate again his surroundings, and to die slowly with all the horrors of death, leaving behind him sorrow and despair.

In spite of these conditions, of all these dangers, no serious precautions are taken for protection. The public is constantly facing the enemy, not being even aware of its danger and of the many sources of contamination by which it is surrounded, for instance the business houses where many employes breathe the same vitiated air, of overheated rooms where often quantities of merchandise are stored up covered with dust and all kinds of micro-organisms; the small apartments without any air, never cleaned, repaired or disinfected, where often one or more patients suffering from tuberculosis has lived and died; the berths in the railroad cars where tuberculosis patients of all degrees have slept when on their way to seek relief in other climates; the glass or cup in public places used by everyone; in hotels, the beds, the carpets, the curtains, soiled by the sputum of ignorant or indifferent patients; all these are constant sources of contamination.

One of the great causes of contamination is the use of raw meat, or meat which is not cooked enough, owing to the fact that, in spite of all precautions taken, many cattle suffering from tuberculosis are put on the market. Danger also lurks in the milk given to our children.

The disease does not belong to the human race; it belongs to the bovine race. Vaccine from child to child or taken from non-immunized or tested animals, as it has been done formerly, was also one of the principal sources of contamination.

Syphilis is the real source of many of the plagues which threaten humanity. Since the 15th century when it appeared

in its entire and new virulence, it has entered into our blood constantly with every generation, diluted so that it has lost much of its immediate danger, and thus has given birth to other maladies like anaemia, scrofulosis and general tuberculosis.

Rarely a young man who leads a so-called bachelor life has escaped having a venereal accident of some kind and whatever is said of blennorrhoea it certainly is in some way syphilitic, and although appearing to be entirely healed, yet in reality is never cured; the virus remains in the prostata and thus it happens that, when married, to the surprise of all scrofulous children are born.

Another cause for contamination of tuberculosis must be mentioned the danger of which is not sufficienty considered. It is the woman who, with her long skirts, wipes up from streets, from cars, public places, etc., etc., numerous bacilli resulting from the sputa of careless patients which are thus carried into her home, where children and other members of the family are thereby exposed to contamination.

We may say that the enemy is everywhere, invisible and waiting for the opportunity to develop; we are without defense by ignorance of the danger, to stop the ravages.

To stop the ravages and the spreading of tuberculosis, energetic measures must be taken the same as for epidemics of other contagious diseases. The government and the Board of Health should intervene; in each state, in each county or city a committee should be elected ordering every citizen to be physically examined; the sputa should be analyzed and a thorough examination of the condition of the lungs made. This is done to protect us against small pox. Why not take the same measures against the equally terrible plague, tuberculosis? Thereby we would know where the enemy lies and energetic measures could be taken to disinfect the dwellings, treat and send the patients into hospitals or sanatoria, thus separating them from those yet free from the disease.

Consumption is curable, absolutely curable; the proof has been made.

The meeting of today is devoted to a generous and laudable task, to stop, if possible, this terrible scourge and the questions to be discussed are wise and practical.

The principal question is to search for the best way to treat tuberculosis by the most modern method.

In Mr. Crotte's opinion, based upon an experience of 20 years, sanitariums must be situated in localities where the air is pure, free from fog and mist, sheltered from winds, not at too high an altitude, not too near the sea, but yet near enough to receive the salt air without its harshness and intensity. This air stimulates the appetite and is also antiseptic.

An altitude above 4,000 to 5,000 feet is not suitable. At Davos Platz in Switzerland where the altitude is about 4,500 feet there are more than 50,000 patients treated. They feel very well; the pure ozonized air causes them to breathe with ease, but when the patients leave the place and try to descend blood frequently flows from nose and mouth and they find it impossible to stand the heavy atmosphere natural to the low altitudes. To send patients to those sanatoria means to bury them alive and to separate them forever from their families.

The sanatoria can be very spacious and contain from 500 to 1,000 rooms, exposed to the sun. These rooms must be constructed in such a manner as to facilitate the distribution of air charged with ozone, and especially with the vapors of formaldehyde which with certainty destroys such bacilli. The rooms should always have the same temperature; the air should be renewed day and night; the bacilli must be fought constantly with an antiseptic atmosphere to prevent them from creating their toxins and allowing thereby the diseased lungs to heal. The patient should eat nitrogenous food and in as great a quantity as possible. To this food phosphorous substances should be added which are necessary to reconstitute the lungs which in the case of tuberculosis always lose this principal element.

It is always well to occasionally change the climate; however consumptives may be cured without this change I consider all hypodermic injections and serums innoxious and sometimes dangerous. If a vaccine against tuberculosis could be found, as the vaccine against smallpox, an aim would be attained, as it might prevent the disease; but what effect can be expected from an injection in reference to a cure; how could it serve to heal cavities in lungs of which the substances are in a state of decomposition.

To obtain this end a local treatment is necessary; we must reach the lungs directly without danger to the patient. Electricity alone is the marvellous agent by which we can gain this result; this wonderful agent has the power of passing

through the skin, the bones, even the brain without ever injuring the patient.

Emile Gautier, of Paris, the distinguished literary writer, has said, "I know many methods which by their inventors "are claimed successful but I know only one which has really "given results, it is that based upon electric static currents "of high tension transfusing medicaments and antiseptics "through the pores of the skin, together with inhalations of "formol, thus reaching the seat of the malady and enabling "thereby the successful treatment of the diseased parts of the "body, I mean in one word, the method of Francisque Crotte."

The same Emile Gautier cites many cases of cures known to him personally and certified to by many known physicians in Paris, such as Dr. Bertheau, Dr. Malsang, Dr. Decan, Dr. Guidez, etc., etc.

Electricity carries with it the antiseptics, just as galvanoplasty is used to carry the metals. In medicine its use is still in infancy; every day it reveals to us surprises. Since 1893 when he communicated his report to the Academy of Science of Paris on his method for the cure of consumption and the results accomplished, he has obtained, with the aid of distinguished physicians, numerous cures. Since he has been in America he has also obtained very good results and we can cite some physicians who are much pleased with the method.

Crotte treatment consist, 1st, in inhalations of vapors of formol; 2nd, in transfusion or transport of antiseptics by static currents of electricity of high and medium tension.

The first operation consists in the disinfection of the patient by ablutions with a solution of formol. After this, and when the pores of the skin are open, we let the static currents pass by connecting both poles on the lungs, that is one pole on the chest and the other on the back.

Fig. 1 represents the static machine made in Paris specially for the transport of medicaments. In Fig. 2 and 3, sponges saturated with other antiseptics dosed according to the case are applied on the skin for about ten minutes and we permit the currents to pass for the transport. In this manner the bacillus is absolutely destroyed, and if its reproduction were not so rapid, a few treatments would be sufficient for the cure, but it is necessary to apply the treatment every day in order to prevent the new comers from creating their toxines, the initial

cause of hectic fever, of the poisoning of the blood, and of the decompsition of the pulmonary substances.

There is no possible room for doubt. The transfusion of mendicaments through the pores of the skin by electricity is an accomplished fact.

Analysis made by Dr. Wolf, Bacteriologist of Women's Hospital, New York City, who has ascertained the presence of formaldehyde and of iodine in the lungs and other organs after the transfusion of these medicaments into the bodies of animals by static currents of electricity.

NEW YORK, September 9th, 1899.

MR. FRANCISQUE CROTTE,

*Dear Doctor:*—I removed the lungs of the guinea-pig you treated with the iodine, extracted same with distilled water and chlorine water, the same acidified and shaken with carbon disulphide; I obtained a marked violet-red coloration showing the presence of iodine.

No. 4272. (signed.) A. WOLF.

NEW YORK, September 9th, 1899.

MR. FRANCISQUE CROTTE,

*Dear Doctor:*—I removed the lungs of guinea-pig you submitted to the formaline treatment; extracted same with distilled water, distilled the extract, treated the distillate with a drop of very dilute phenol and poured same over strong sulphuric acid. At the point of contact of the two fluids, I observed a faint but positive pinkish coloration showing the presence of formaldehyde. The organs of this animal showed a marked form of preservation, not the slightest evidence of putrefaction being evident.

No. 4273. (signed) A. S. WOLF.

The above reference to the preserved condition, of the specimens, after lying four days in the bottles, without alcohol or other preservative, is another proof of the presence of *formaldehyde*, which prevents putrefaction.

# A STUDY AS TO THE CAUSE OF TUBERCULOSIS AN IMPORTANT FACTOR AS TO ITS TREATMENT.

BY B. F. LYLE, M. D., CINCINNATI, OHIO.

As physical depreciation is an important, if not an essential factor in the propagation of consumption, the avoidance of habits and methods of living which favor this condition, is a self-evident necessity if we wish to avoid the disease or promote its cure.

While faulty environments have a debilitating influence on persons, we also learn, from the investigations of Prof. Ransome and others, that these same conditions favor the continuation of the existence of tubercle bacilli outside the body and may even favor their growth.

From the bacteriological experiments of Dr. Denison we learn the capability of altitude in inhibiting the growth of bacteria, and its advantages because of this and other reasons. Still the search for a locality or climate where consumption canot be acquired, has always been in vain. The large percentage of persons infected with the disease makes it a pecuniary impossibility to hope to secure for them the benefits of a removal to more suitable climates.

The disease is with us to stay until we can, by aid of an intelligent and enlightened public opinion, accomplish its eradication. For consumption, like all other infectious diseases, is a filth disease and consequently a preventable one.

The universal prevalence of tuberculosis indicates that all are exposed to the influence of its exciting cause. That, as a rule, only those of natural or acquired physical inferiority succumb, proves the necessity of having perfect and healthy bodies.

As causes predisposing to the disease we will consider heredity, age, sex, race, occupation, food and environment, not taking up the potent influences of syphilis, intemperance,

Read before the Medico-Legal Society as a contribution to American Congress of Tuberculosis, March 21, 1900.

trauma, and the debilitating and inviting influences of bronchitis, pneumonia, influenza, and other diseases.

HEREDITY:—Since the publication of Squire's paper, the importance of heredity has not been given the consideration it no doubt deserves. As Baumgarten suggests, the presence of tuberculosis may be, and no doubt is at times, due to direct transmission from the mother.

The following case, which has not yet been published, is an illustration. Betty P., colored, female, single, aged 32 years, was admitted to the Cincinnati Branch Hospital for Consumptives, December 15, 1899. She stated she had been sick for two years and had had attacks of hemoptysis during the whole of that period. She had had frequent night sweats for the past twelve months. A child eighteen months old had died four months previous to her admission. She was in the last month of pregnancy. On December 15 her child was born, and on the 17th she died. Post mortem examination revealed a large number of cavities in the upper and middle lobes of the right lung and consolidation of the remaining lung areas.

The child weighed three and one half pounds at birth; when it attained the age of two months it weighed five pounds; its weight then declined to four and one-half pounds; it died March 3, 1900, aged 78 days.

The postmortem showed the lungs, liver and spleen filled with myriads of caseous tubercular deposits. The kidneys also contained a few caseous masses in the cortical substance; the bronchial glands were very large;the intestines and mesenteric glands uninvolved. Tuberculosis has been produced experimentally in the young of mice by injecting tubercle bacilli in the pregnant mother.

We have good reason to suppose if the number of bacilli transmitted is small the child may be able to cope with them successfully until an attack of measles, whooping cough or other exhausting disease, turns the scale in the wrong direction.

From the consideration of heredity we learn the importance of not only isolating the patients from all possible sources of infection, but the necessity of attempting by hygienic measures and medicinal agents to increase the physical well being of the patient.

The case cited also proves the necessity of adopting some

legal steps to prevent the marriage of tuberculous persons, as my patient was able to successfully carry and give birth to two living children while a victim of the disease.

AGE:—Sanitary laws, and increased knowledge of sanitation and hygiene, have produced great results in diminishing the deaths from consumption during the past forty years, the difference between the first and last decade being thirty-six per cent. (These are Eglish statistics.) This effected chiefly the most productive age periods. Between 15 and 30 years, or early adult life, the diminution is 52 per cent. This marked improvement is due largely to the removal of the sources of the so-called "aereal sewerage."

Like changes have not occurred in the mortality rates of intestinal tuberculosis. Here the reduction has only been 8.5 per cent. for all ages, 3 per cent. between the years 1 and 10, while under one year of age there has been an increase of 21.7 per cent.!

These statistics indicate the happy results of having improved work shops and homes, and the unfortunate consequences of lack of proper measures to prevent the giving to the young the milk of cows which are tuberculous. About forty or fifty per cent. of the milk cattle in the populous parts of the country are in this condition.

SEX:—It is impossible from hospital statistics to judge the relative frequency with which the sexes are affected, as women are less apt to apply to hospitals for treatment when sick. Judging from the fact that the larger number of females affected are between 20 and 30 years of age and the larger number of males are found in the following decade, we may infer that females are able to offer less resistance to the attacks of the disease.

Race seems to exercise some slight influence in this respect, as we find the majority of cases in colored people, occur at an earlier age than they do in the corresponding sexes of the whites. This would indicate an increased susceptibility.

OCCUPATION:—The record of 300 males admitted to the Branch Hospital, after excluding laborers and teamsters, show the following as occupations which seem to have a deleterious effect and the number who followed them: stone-cutters and masons 12, barbers 10, porters 9, cooks 8, bartenders 8, clerks 8, shoemakers 7, waiters 6, painters 5, molders 4, machinists 3, tailors 3, broom-makers 2. Owing to the compara-

tively few men in our city who are cooks, the number admitted is very large. This is no doubt due to the fact that they work in dark, illy ventilated rooms, which are filled with moisture and are super-heated.

The deleterious influence of the stone-cutters' trade has long been recognized.

Two of the four Hebrews admitted were tailors, the occupation of cleaning and repairing clothing offering many opportunities for infection.

ENVIRONMENT:—The deleterious influence of lack of sunshine, damp houses and poor ventilation is self-evident. Its importance, however, is not fully appreciated nor the responsibility of house owners recognized. When a patient is admitted to our hospital we have been in the habit of indicating the place of former residence by placing a dot on a map of the city. It is almost startling to notice how the older portions of the city and the houses along the river, canal and hillsides are indicated. From one house we have received four patients, all from separate families, from two other houses we have received two each.

A newspaper reporter, having seen the map and, being animated with a philanthropic desire to warn his fellow citizens, secured a copy. After having it photographed and a plate made, he prepared an article extolling the advantages of proper sanitation. With commendable pride he showed it to his chief, who ordered the plate melted and the article destroyed, giving as his reason his inability to protect himself from the clubs and invectives of the infuriated property holders. Truly this is not Altruia!

FOOD:—The importance of a proper dietary for the prevention as well as the cure of the disease is self-evident.

A lady of our city recently went into one of the small groceries which supplies people of one of the districts just mentioned with food. Her object was to learn the variety and kinds of food purchased. She was informed that bread and molasses, seconded by potatoes and cabbage, were chiefly sold; these were supplemented by beer obtained from a neighboring saloon. Lack of proper nutrition, caused by the adoption of such a ragimen, is no doubt a potent agent in promoting the increase of the disease under consideration, as well as intemperance.

In this city, as in many others, societies are found, the

purposes of which are to instruct the ignorant what food to buy and how to cook it. Instruction is also given in an unobtrusive way of the advantages of cleanliness and cheerful homes. If we hope to diminish the spread of tuberculosis it will be necessary to multiply these methods.

Of the 300 men received into the hospital, five have each lost a leg; besides these, many other patients have been inmates of either the surgical or medical wards of hospitals. The cause of the disease in their cases is obvious and can only be removed by excluding from all general hospitals patients who have tuberculosis.

This is the course pursued by the Cincinnati Hospital, and its advantages redound not only to the benefit of those who are removed to a more suitable location; but also to those who are protected from an infectious disease during periods of prostration, accompanied by diminished resisting power.

# A REVIEW OF THE MODERN TREATMENT OF PULMONARY TUBERCULOSIS.

BY M. J. BROOKS, M. D., PULMONARY SANATORIUM, STAMFORD, CONNECTICUT.

Results are determined by the direction and sufficiency of effort. Their value is measured by the benefit conferred upon society at large. That the century now drawing to a close has been replete with meliorations, cannot be gainsaid. That the medical profession, as a body, has largely contributed to this end, must likewise be admitted.

In consonance with fundamental irrefragable forces of evolution, progress obtains along every line of human endeavor; but I sometimes have thought, that much of the science of medicine, if judged by the standard of accomplishment, has scarcely kept the stride. Consumption, for instance, is as fatal, as prevalent, proportionately, today as prior to the Christian Era. It was, it is still the greatest scourge of the human race. It has destroyed more lives; caused more suffering; more sorrow, than all the wars of history. It has caused more deaths than pestilence, or the plagues that have devastated the earth. It causes more deaths than all other infectious diseases to which flesh is heir.

In the domain of etiology, pathology, hygiene, and sanitation, very much has been accomplished, but therapeutics, a guage of effort, it has seemed to me, lags somewhat behind.

True, pulmonary tuberculosis is curable today in its earlier stages. So it was five hundred years before Christ, if we are to believe Hippocrates when he said that consumptives, if treated *ab initio*, may recover. But we are powerless today as the earliest pioneer in the presence of advanced cases.

Haeckel's axiom regarding nature's reversion to the simpler primordium still holds good. After twenty centuries of drug experimentation,—and here permit me to state, parenthetical-

Read before the Medico-Legal Society as a contribution to American Congress of Tuberculosis, March 21, 1900. Discussion of second question.

ly, that there is no drug mentioned in the pharmacopoeia that has not at some time been vaunted not as a mere remedy, but as a specific in the treatment of this disease,—I repeat, after twenty centuries of more or less empiricism the fundamental basis of the modern treatment of pulmonary tuberculosis rests upon the simple hygienic factors promulgated by the early pioneers in the field of medicine. If proof were requisite Knopf's data should be sufficient.

Isocrates, a contemporary of Hippocrates, later, Montano, Galen, Lazare, Riviere, Morgani, he of hydatid memory, Boerhaave, Avicenna and others recognized the contagiousness of pulmonary tuberculosis, with all its implications and consequent deduction of isolation or at least environment change. Osler affirms that the belief in the contagiousness of this disease may be traced without interruption from the days of the early Greek physicians through the Latin races to the present time.

Littre tells us that Aretaeus several centuries before Christ based his treatment upon rest, massage, milk diet and change of environment. Pliny was a firm believer in the value of actinism. He was likewise, perhaps, the earliest advocate of the pine products which have played so prominent a part in the treatment of consumption. He likewise had faith in the air of pine forests. Galen and Avicenna pleaded earnestly for pure air, and Celeus laid great stress on fresh air of country. In the middle ages Silvius is found describing with fair accuracy the pathology of the tubercle; Baglivi deploring the inefficiency of medicinal remedies and Montano maintaining the infectious character of the sputum.

But the centuries of drug experimentation since has not been without value. There is good in all things. Through the vista of shadow bright points may be seen. It has at least afforded us a clearer conception, a broader comprehension, a more facile applicability, perhaps, of the fundamental, physiologic, hygienic, common sense essentials of our earliest predecessors.

Out of confusion some order has been evolved. Upon the threshhold of the twentieth century, the scientific element of the medical profession of all lands stands firmly united upon a rational and systematic basis of therapy, with at least keen apperception of its paramount importance and with a clear and accurate appreciation of its etiology and pathology. Truly we have reason to be most sanguine as to the immediate fu-

ture. We have reason to be most sanguine, but let us not jeopardize the good to be accomplished through united effort, in the crusade against tuberculosis, by undue optimism. We have as yet no specific for consumption. Col. Chancellor and others to the contrary notwithstanding. As Dr. Bowditch, of Boston, said the other day, "In the enthusiasm which marks the beginning of every new movement we have to meet the inevitable errors of judgment and exaggeration of statement which if not anticipated, will surely detract finally from the merits of any cause. Where popular interest is excited, as in this case, these dangers are more than doubled."

Pickert (Munchener Medicinische Wochenschrift, June, '99) likewise deplores this wave of unwarrantable optimism. An absolute cure, he says, in the sense that the pathogenic agent is absolutely eliminated or rendered so harmless in the body that in order for the disease to redevelop a new infection is necessary, is only possible theoretically. In practice only a relative cure is attained, as a rule. And Prof. Kobert, of Rostock, adds, sententiously, that in miliary and galloping consumption no therapeutic method whatsoever can save the patient.

The so-called modern treatment of pulmonary tuberculosis had its inception with Dr. George Bodington, of Warwickshire, England, over fifty years ago. He, indeed, was the father of the sanatoria treatment for this disease. He conceived the idea that physiologic regimen and the several hygienic adjuvants could best be carried out under constant, sincere, painstaking supervision. His system embraced every essential detail of modern methods, but it was a departure from the general trend of the profession and he received little encouragement from his colleagues. Ten or fifteen years later Herman Brehmer, often erroneously termed the Father of the Movement, established his celebrated institution at Goebersdorf. He, however, met with more success. Other institutions shortly followed. So after fifty years experience and careful study of the results, the master minds of all lands are at last of the unanimous opinion, that if the disease is to be eradicated such a consummation can only be obtained through the establishment of sanatoria under efficient medical supervision.

Under close analysis however much that was formerly considered necessary to sanatoria treatment has been eliminated.

It has been found that climate, altitude, and atmospheric pressure are unessential. Detweiler, of Falkenstein, is said to have expressed this view twenty years ago. Felix Blumenfeld's extensive observations established the fact beyond the peradventure of a doubt. The fundamental factors are embraced in the systematic hygienic and diatectic regimen under constant medical supervision and all that such implies.

The ablest authorities now agree that the treatment of consumption to be of practical value must be carried out in juxtaposition to centres of habitation. Patients must be cured in the locality where necessity compels them to live.

In Germany, where sanatoria for consumptives have reached the highest number these institutions are most keenly appreciated. Von Leyden, Gerhard, B. Fraenkel, Von Leube, Von Leibermeister, Von Ziemssen and Landesrath Meyer are among the strongest advocates.

That climate is not an essential factor was the consensus of opinion of the International Medical Congress held at Moscow in 1897.

Dr. Pannwitz, General Secretary of the Tuberculosis Congress of Berlin, in his report says: "That the Society of the Red Cross, by establishing a hospital on the Grabow Sea in North Germany, has contributed most toward proving the fact that tuberculosis can be treated successfully anywhere without regard to climate."

The results obtained by Barr, of Nice, Soulier, of Algiers, Rachitici, of Milan, are equal in every respect to those of Andvoord, at Tousaasen, in Norway, or Gabrilowitch, in Finland.

That elevation is unessential to treatment the same authorities aver. In addition reference should be made to Hueppe's article in the Berlin Medicinische Wochenschrift of May last. Dr. J. Edward Birmingham, who has given some study to this aspect of treatment, is of the opinion that elevation has no influence whatsoever over this disease. He maintains that patients do as well at sea level as high altitudes, and Knight, Otis, Shaper, Braine-Hartwell Birmingham and others, have recently expressed similar views. Dr. J. C. Adami, replying to Trudeau, at a recent medical meeting, expressed the opinion that the good results obtained at the Adirondack Sanatorium were due solely to the rigorous carrying out of systematic hygienic regimen.

As to atmospheric conditions the late Prof. Sir Thomas Granger Stewart, British Delegate to the International Congress, said in his address, "Even in Edinburgh where we are not unfamiliar with rain and mist and east winds, sanatoria treatment is carried out in the "Victoria" as it is on the beautiful slopes of the Taunus, and with results as satisfactory as those of Dr. Detweiler and other workers in German sanatoria."

From time to time various modifications of sanatoria treatment have been suggested, tried and for the most part found wanting. Thus the Swiss chalet or cottage system has been found inferior to institutions under one roof. Constant guidance, medical supervision and advice, hydrotherapeutic measures, proper nursing and watching in order to eradicate careless habits and inculcate good ones, attention to hygiene and disposition of sputa, disinfection and prophylaxis, enforcement of strict routine, and individual symptomatic treatment at the proper time, all of which are of paramount importance, cannot be carried out to the best advantage under the cottage system.

An outing as suggested by Keyes, of Chicago, for the treatment of pulmonary tuberculosis, is obviously no substitute for sanatoria treatment. Every essential scientific detail is necessarily precluded through absence of proper material and equipment. The scheme has absolutely no scientific advocate.

In the light of our present knowledge the following qualities are deemed indispensable for a sanatorium.

1. There should be a good southern exposure.

2. The soil should be well drained and preferably of gravel. It is, of course, essential that the foundation should be dry.

3. There must be free access of sunlight.

4. The "camp" for the "Liege und Dauerluftkur" should be situated in the open, but protected from north and east winds. Glass covers to the verandas are not necessary.

5. There should be facilities for walking, preferably through woods, and if possible up a slight incline from sanatarium so that homeward journey will be down hill. There should be facilities for resting at easy distances.

6. The diet should be most carefully regulated. Feeding should be slightly in excess, but the food should be well

selected, nutritious, temptingly served and, of course, properly cooked.

7. There should be large, airy, individual sleeping apartments, acording free admission of sunlight.

8. Every patient must be provided with an individual spitting-cup, and forbidden upon pain of immediate dismissal to spit anywhere else.

9. There should be withal scrupulous cleanliness, adequate service, and regular disinfection. The furniture should be somewhat severe. Carpets, brooms, and hangings have no place in a well organized sanatorium. Cloths dampened with antiseptics, should be substituted for dusting.

10. There should be a routine of occupation, together with simple diversions, to prevent introspection.

As to adjuvants to sanatoria treatment, mention should be made of inhalation by Professor Kobert of Rostock, in his address before the Berlin Congress, maintained that inhalation is as important as hydrotherapy. Meissen, Von Schrotter, J. Lazarus and others affirm that no sanitorium is complete without its inhalation chamber. It is the feature of most German institutions, particularly the Alland near Vienna, and Hohenhonnef institution on the Rhine. Antiseptic and the aromatic hydrocarbons of the turpentine group are the ingredients generally used They are administered by syphon or comminuter arrangement with compressed air. Osler believes that the compressed air is of the greatest value *per se*, and states that under its use there is a gain in weight, improvement in appetite and a reduction of fever.

Having given special study to this accessory, I believe that excellent results are to be had by charging the atmosphere of the institution with antiseptics by means of a vacuum pump or engine. I do not believe that medicated air directly destroys the tubercle bacilli, although it certainly tends to inhibit their growth. P. Lacroix, however, (British Medical Journal Oct. 14, 1899) positively asserts that experimentally he has shown that medicated air is absolutely capable of destroying both the tubercle bacilli and microbes of mixed infection. Dr. Penrose, in his paper read before the Johns Hopkins Medical Society upon the 5th inst., asserts that the antiseptic action of inhalations is manifested by the rapid disappearance of pus organisms from the sputum

In brief, the claims for inhalations are as follows.

It destroys much of the mixed infection, limits toxine necrosis, diminishes septic decomposition, loosens and facilitates the removal of alveolar and tubular exudations and allays local tissue irritation.

Of the necessity of hydrotherapeutic measures in the treatment of consumption, there can be no question. Hydrotherapy however, should be systematically and rationally carried out in sanatoria treatment, as part and parcel of daily routine.

Nauheim baths, so intimately connected with the name of Schott, have been found valuable in its application to pulmonary tuberculosis. Of course, minus the gymnastic resistant exercises. It certainly steadies an intermittent pulse, tends to relieve visceral engorgement by promoting a superficial capillary congestion. It is a superior substitute for the pneumatic cabinet.

No medicinal agents whatsoever that can be administered subcutaneously or *per oram*, have any favorable action upon tuberculous processes. Creosote, guiacol and the like, to use the words of Osier, "have no essential influence on the progress of this disease."

Symptomatic treatment is largely a matter of judgment.

Pyrexia, chills and subnormal temperature, paroxysms of coughing,night sweats,hemorrhages and collapse and the thousand and one complications or personal idioyncrasies of the tuberculous, must of course, be intelligently dealt with. The more comprehensive and appreciative the physician of the myriad manifestations of this disease, the better naturally will be his results in this respect.

Tuberculin serums and culture products have, owing possibly to the nature of this disease, proven nugatory if not disastrous.They have been consigned to the file of disappointments by the leading Continental investigators. Sir Herbert Maxwell's and Dr. Pye Smith's report to the British government of the Berlin Tuberculosis Congress, states without reserve that they have no value in the human race. Prof. B. Froenkel positively asserts that neither Koch, Klebs or Maragliano's serum have any value whatsoever. A. Broden (Achives De Medicine, Jany., '99,) found that the tubercles were better developed in dogs treated with tuberculin than in such animals untreated.

Personally, I must admit I have had little experience with

the use of any of these products other than the antiphthisin of my teacher, Edwin Klebs, but from reading and observation of the work of others I must concur in the dictum of William Osler that no germicidal or curative influence has been demonstrated in any of them. If, as many bacteriologists at present aver, there are marked differences between bovine and human tuberculosis, much that has been published in favor of several of these products will necessarily have to be considered in another light.

In the foregoing I have endeavored sincerely and without bias to review the history of the Modern Treatment of Pulmonary Tuberculosis. I have attempted to show that this treatment is based upon principles of hygiene, conceived by the ancients, recognized and accepted by the Latin races, first applied to institutional treatment by Dr. George Bodington over a half century since, and elaborated and facilitated by later German sanatarians.

As results are determined by the direction and sufficiency of effort, it follows that sanatoria for consumptives in the light of our present knowledge and experience afford the most certain means of combatting this disease and embraces in sum and substances the Modern Treatment of Pulmonary Tuberlosis.

# THE COMMUNICABILITY AND THE RESTRICTION OF CONSUMPTION.

BY HENRY B. BAKER, A. M., M. D., LANSING, MICH., EX-PRESIDENT AMERICAN PUBLIC HEALTH ASSOCIATION, ETC.

Speaking of the restriction of tuberculosis, for the best results, there must be general co-operation of all classes of people, and especially and first of all the co-operation of the coughing consumptives themselves, because the main source of the spread of tuberculosis is now well known to be the sputa ejected by well-developed cases of consumption of the lungs. In order to get in communication with, and the co-operation of the coughing consumptives, it is essential that there shall be notification. Accordingly the Michigan State Board of Health, in pursuance of what it believed to be its duty under the laws, declared consumption to be a disease dangerous to the public health, such as is required by law to be reported to the local health officer. That action was taken over six years ago. Hundreds of physicians, throughout Michigan, have acquiesced in this action. One, at Coldwater, refused to comply, was successfully prosecuted, and paid his fine. A few in Detroit failed to report; one was prosecuted, fined in justice court, appealed to the circuit court by which he was discharged, but the case has been appealed to the Supreme Court which has not yet decided the case.

## MEDICAL AND OTHER SCIENTIFIC EVIDENCE.

There are at least eight lines of evidence proving that consumption (tuberculosis) is a communicable disease:

1. Clinical experiences and observations by physicians. There are now on file in the office of the Michigan State Board of Health great numbers of communications from

Read before the Medico-Legal Society, as a contribution to the American Congress of Tuberculosis, March 21, 1900. Discussion of second question.

physicians, from different parts of the State, detailing instances of the spread of the disease.

2. Evidence derived from statistics.

3. The production of the disease, as has been done, by means of the infectious dust collected from rooms occupied by consumptives not careful of their sputa.

4. Evidence through direct inoculation experiments with consumptive matter. The disease was first artificially caused in this way in 1865 by Villemin and verified very many times since that time.

5. Bacteriological evidence,—a given species of germs being found present in this disease, and absent in other diseases, and in health.

6. Biological evidence,—the actual artificial production of the disease by means of the specific germs, and the repetition of this process hundreds and thousands of times, as has been done.

7. The infectiousness of milk of tuberculous animals, as has been experimentally proved bacteriologically and biologically. The production by natural methods, of tubercular disease in calves and in children, by means of milk from tuberculous cows and from tuberculous women.

8. Combined statistical and other facts proving that consumption actually has been, to a considerable extent, restricted by reason of acting upon knowledge of its communicability and of the simple methods by which it may be restricted. This is notably true in Michigan, as proved both by the mortality statistics published by the Secretary of State, and by the sickness statistics compiled by the State Board of Health.

The Michigan State Board of Health has, by formal resolution, declared, and it has thus become the duty of its executive officer to publish to the people, that consumption is a "disease dangerous to the public health." This information is essential to the people, in order that they may comply with the several public-health laws in which that term is employed, and for the definition of which there is provided by the laws of this State no higher scientific authority than the State Board of Health, which has been legally established by the State for the express purpose of collecting such "useful information" and "disseminating it among the people." A former Attorney-General of Michigan, in response to a ques-

tion raised by the health officer of Detroit, stated in his opinion as follows: "The highest medical authority which I recognize in this State on such subjects is the Michigan State Board of Health."

In order that any public or official action may be taken for gaining knowledge of a disease, with a view to its prevention, or for imparting knowledge of it to those most endangered, or for its restriction, the first essential is that the health authorities shall have notice of the cases which occur. Nearly all the public-health laws are useless unless such notices are given.

All progressive physicians who have given attention to the subject must be convinced that the Michigan State Board of Health has ample scientific and legal authority for the action it has taken; therefore the objections if any, must be for other reasons. What are those reasons?

It is admitted, apparently by all, that tuberculosis is communicable, but some claim that it is "only mildly contagious." Physicians cannot easily trace it, as a rule. But it is not difficult for the statistician who is also well informed in pathology, to estimate to what extent, compared with other diseases, tuberculosis is communicable. Let us examine the subject briefly: Pathologists and bacteriologists teach us that there is no tuberculosis without the bacillus tuberculosis; that if any person has tuberculosis that person contracted the disease by taking into the body the bacilli, without contact with which or with the poison of the bacilli there is no tuberculosis. How many persons contract tuberculosis in Michigan in every year? Disregarding, for the time, all those except the class known as consumptives, we know that about two thousand die each year. We know that many who contract consumption recover, and later die of other diseases. I believe that more than half of all who contract the disease recover to that extent; that means that in every year at least four thousand persons in Michigan contract comsumption. Is a disease that is spread to four thousand persons a year in Michigan only "mildly contagious?" Is it not one of the most communicable diseases that there is in Michigan? There seems to me to be but one answer—certainly it is. Under present conditions, consumption spreads to more people than smallpox, more than whooping-cough, more than measles, more than scarlet fever, perhaps less than typhoid fever, which although

in each year causing the death of only one thousand probably ten thousand persons in Michigan contract; but consumption is spread to more persons than is diphtheria. Consumption is the most dangerous communicable disease in Michigan.

### HOW IS CONSUMPTION SPREAD?

It is well known that consumption is usually spread in the same manner that diphtheria is spread, namely, not ordinarily by the breath, but by what goes out of the mouth of the infected person, directly and indirectly to the nose or throat of the victim who contracts the disease. If you ask—Then why not isolate consumptives, just as diphtheritics are isolated? I reply: Because, while the diphtheritic patient is generally a child who cannot be relied upon to do what is required for the protection of the public health, the consumptive is generally an adult at the age when, except for having contracted consumption, he or she would be in the prime of life; and generally in the possession of such intelligence as to be capable of being so instructed as to guard the interests of the public health. Complete instructions to consumptives have not yet been issued by the Michigan State Board of Health; but brief directions such as are on this slip (No. 224) have been employed for many years.

The Michigan State Board of Health has never recommended that consumptives be dealt with in precisely the same manner that persons are who are infected with acute diseases. It has never advised isolation, nor the placarding of premises. Leprosy, a disease as chronic and long continued as consumption, was stamped out of England by means of isolation hospitals, and other vigorous measures for isolation. And, although it was a very great hardship to thousands of persons, it has since that time prevented that loathsome disease from attacking tens, perhaps hundreds of thousands of persons. But for the hardships of comparatively few persons, the disease would probably have continued to afflict the human race through all time, just as a few persons now propose to permit tubercular diseases to continue.

The work of educating the people of Michigan in methods for preventing the spread of consumption, began in 1880 (before the discovery of the germ by Koch, but after the disease had been proved to be communicable, clinically, and by inoculation experiments) when a paper by Dr. H. F. Lyster,

of Detroit, on "The Prevention of Pulmonary Consumption," was read at a sanitary convention, printed and distributed by the State Board of Health. In 1881 a paper by Dr. Bela Cogshall on "Consumption: Is it a Contagious Disease? What can be done to Prevent its Ravages?" was read, printed and distributed. In 1886 a paper by Dr. Bion Whelan, of Hillsdale, on "Consumption; Its Causes and Prevention," was read, printed and distributed. In 1889 a leaflet on the "Causation of Consumption," and a paper on the "Relation of Certain Meteorological Conditions to Diseases of the Lungs," etc., both by Dr. Henry B. Baker, were reprinted from the Annual Report for 1888, and distributed. In 1889 and 1890 two papers by A. Arnold Clark, of Lansing, on "The Prevention of Consumption," were read, printed and distributed. Some of the above mentioned papers were also printed in pamphlet form, and were sent where it was thought they would be of service in educating the people in methods for preventing the spread of consumption.

But the main work on this subject began in 1891, when the first edition of the four-page leaflet bearing directly upon the restriction and prevention of consumption was issued by the Board, and very widely distributed. September 30, 1893, a resolution was adopted by the Board including consumption in the "official list" of "Diseases Dangerous to the Public Health," since which time very active measures have been taken for the restriction and prevention of the disease.

It being a fact that in 1891, following the educational work by A. Arnold Clark and others, and when the first edition of the leaflet on the restriction and prevention of consumption was so very widely distributed, that the reported death-rate from that disease was, for the first time, much less than the average of preceding years; and it also being a fact that in no year since has the reported death-rate been equal to the average rate previous to that year, and in 1896 the death-rate from consumption being less than it was ever before known to be in Michigan, it seems fair to assume that the lessened death-rate is due to the better knowledge of the people as to the manner of spreading and the best measures for restricting this disease, the result of the active co-operation in the work by the medical profession, the State Board of Health, the teachers of the State, and others for the education of the people in the restriction and prevention of consumption.

The reduction in the death-rate as shown by the statistics of the State Department, cannot be due to more successful treatment of cases by physicians, because the sickness statistics collected by the State Board of Health show that the reduction in the sickness has been greater than the reduction in the death-rate; and the reduction in the sickness began at an earlier date than the reduction in the death-rate, as would necessarily be the case if the lessening of the deaths was due to a lessened number of cases.

All the facts point irresistibly to the conclusion that the restriction of consumption has at last resulted from the knowledge that it is a dangerous communicable disease; and that already in Michigan the death-rate has been lessened by rather more than one-tenth, and the sickness by a much larger proportion.

# TUBERCULOSIS—IS CHANGE OF CLIMATE A NECESSITY IN THE TREATMENT?

BY DR. KARL VON RUCK, OF ASHEVILLE, N. C.

That this question must be answered in the negative appears from the many well attested instances, in which recovery has resulted without change of climate, and the discovery of healed tubercular lesions in post-mortem examinations after death from other causes, in subjects who lived in the larger cities and under most favorable conditions, could in itself supply the proof, that the disease can be recovered from without a change in climate.

There was a period, however, and not very remote either, when a change of climate was the routine advice, and when the peculiar atmospheric conditions of certain regions and localities were considered to act specifically upon the tubercular or phthisical processes; and even now such statements are occasionally advanced in medical literature.

The study of the pathology of tuberculosis and of the life history of the tubercle bacillus,the common experience of renewed activity in tubercular lesions and of extension to previously unaffected parts in patients having made such a change of climate, and the relapses experienced by patients when after apparent recovery at a climatic they returned to their former climate and to their previous social and business relations, all showed that the change of climate alone cannot remove the cause of the disease. While, therefore, it cannot be claimed that a change of climate is a necessity to a cure, I would nevertheless, not be understood as under-estimating its value in treatment. On the contrary there are many direct and indirect influences of a favorable character to be derived from a climatic change, and more still from proper climatic treatment.

Climatic advantages become the more important to eventual successful treatment, the more the particular patient is unfav-

Read before the Medico-Legal Society and American Congress of Tuberculosis, February 22, 1900. Opening paper on fourth question.

orably situated in his home environments; and the more the disease has progressed.

A simple change of locality, regardless of climatic attributes of the place selected, often acts favorably by removing the patient from his accustomed surroundings, diet and general mode of life, by which the social, household and business cares are eliminated, instead of which there are new scenes and new contacts, which act upon the patient and his absence from home favors the observing of better and more hours of rest, recreation and exercise.

If the change is made, to what may be considered a more favorable climate, offering more opportunity for out of door life, subjecting the patient to a greater amount of sunlight and to purer air, and if the selected locality is relatively dry, and the opportunity for contracting cold and catarrh are thereby diminished, an important influence is gained for the patient's general nutrition and for the arrestment of the disease. But, although these and other advantages are present in the most favorable degree, they in themselves do not directly cure tuberculosis, but they contribute to the maintenance of arrested and latent processes and favor their occurrence if the disease is in an active state; while an indefinite continuance of such a changed environment aids nature in securing permanency of these results.

For the majority of cases that seek climatic benefits a simple change of climate is however not sufficient, and systematic and supervised climatic treatment is usually required to secure the benefits spoken of.

"Climatic treatment" and "change of climate" are by no means identical, the former is individualizing and should secure for the particular patient the greatest possible degree of benefit, from the advantages of out of door life, sunshine, rest and exercise, while it should prevent all injurious influences from exposure to wind and severe weather, and from detrimental over-exertion, physical or mental.

Such climatic treatment differs further from a change of climate inasmuch as it can be carried out at home, and if we take advantage of all the out of door life possible, of all the sunshine that nature affords, and regulate the patient's rest and exercise according to the present condition of fever, strength, endurance and circulation, and guard against any injurious influences that may be avoided, much may be accom-

plished at home, and I believe more benefit would follow on an average from such climatic treatment at home, than from simple change of climate to a health resort, where the patient works out his own destiny and calls upon a local physician only after he has demonstrated that the change has done him no good.

The advantages of climatic treatment apart from regions having special advantages as to elevation, purity of air, sunshine and suitable temperatures, have been abundantly demonstrated in the numerous sanitaria in Europe and especially in Germany, many of which are situated in localities which can make no claim to superiority of climatic conditions over the general average of the country, and in which most excellent results are being accomplished by the systematic out of door life and general care and supervision which the patients there receive; and while in a special institution the directing physician enjoys facilities which are often limited or deficient in private practice, I believe much more could be accomplished in the homes of the middle classes and even in those of workingmen and poorer people, who by reason of expense cannot take advantage of distant travel or absence from their homes, than is now the case.

My answer to this question is implied in the foregoing remarks, but to formulate it more concisely, I repeat:—

1st. That climatic change is not a necessity.

2nd. That it is advantageous and desirable, as an aid to the general care and management and to other treatment.

3rd. That climatic treatment under strict and constant professional supervision at climatic resorts, or at home, deserves better consideration at the hands of the profession than it now receives.

# IS CHANGE OF CLIMATE A NECESSITY FOR SUCCESSFUL TREATMENT?

BY CHARLES DENISON, A. M., M. D., DENVER, COLORADO.

To the average Colorado Physician this is a queer question, and the wonder is that it should be proposed at all after all the favorable evidence we have had. The surprise that this issue is raised as to the value of climatic change is increased as we strip the subject of impracticabilities. The negative side of this discussion should not try to force the affirmative to show that the "change" is possible. The affirmative have a right to assume, as a condition precident, that it is not only possible but feasible. But you say nine-tenths of the tuberculosis existing is associated with poverty and its evironments. Very true: but this, though a potent fact to be intelligently dealt with, is not the question now at issue. The only possible qualification of this word "necessity" is suggested in the phrase that follows: "for successful treatment," i. e. that there is some other single line of treatment, opposed to the change, which is superior to it. The question then arises,—what are the environments or conditions of such other "successful treatment" that individualized selection of climate cannot be utilized? Is it not that some unreasonably boomed hobby has to be first considered, some local prejudice to be conceded to, or because some home sanitoria is recommended? If possible (?) let us, as physicians, divorce this question from personal advantage or local prejudice. Let our argument be untarnished by such defects.

The question should properly be:—and this is what I claim we are discussing—"*Other things being equal is change of climate a necessity for the best results in the treatment of tuberculosis*?" Looking at it in this light we are not to be burdened with anxiety for the surrender of an individual's calling and the pecuniary sacrifice involved in the change. Neither are we to be prevented from adopting any desirable additions to the

Read before the Medico-Legal Society and the American Congress of Tuberculosis, February 22, 1900, in discussion of question No. 4.

climatic prescription. It is climatic with these aids and not in opposition to them.

Such a consideration of the subject practically admits the fact that the best method of treatment is a combined or combination one. Why then should not any other successful treatment enter the combination together with change of climate in order to give the largest percentage of results possible for each individual case?

If it were climate alone which was to be considered, the issue would be gladly accepted as between this and any other single method of treatment. This would necessarily involve the adjustment of the season of the year, altitude, dryness, etc., to the patient's individual needs. It is doubtful if any one remedy yet discovered excells in benefits conferred a proper change of climate and environments in curable cases, and in some others for whom only prolongation of life is possible.

All students of climatology, especially if they have had any personal experience in well chosen high altitudes, admit the desirableness of such a change. The reasons for a change may be, and often are, used to further the local claims of certain sanitoria; but we, in discussion, should consider these reasons impartially, with the view of ariving at an ideal climate decided upon without reference to any particular locality. This argument for an ideal climate for the majority of consumptives has been* variously reiterated by me, and is summarized in five main propositions.

1. "Dryness opposed to moisture."
2. "Coolness or cold preferable to warmth."
3. "Altitude preferable to sea level pressure."
4. "Sunshine to Cloudiness."
5. "Variability preferable to equabllity." The latter because a certain degree of variability is a *sine-qua-non* of the preferable combination of climate attributes constituting ideality, including, for the majority of chronic pulmonary invalids, rarefaction of the air. An unbiased analysis of these five propsitions, together with a due consideration of the questions of air-diathermancy, the radiation and absorption of heat, the mountainous configuration of the soil, the physical

* See 2 reports to the International Medical Congresses, '76 and '87; the the article on "Climate Treatment," in Fostor's Practical Theraputics, and in Journal A. M. A , Nov. 7 and 14, a later article on "The Climate of Colorado for Respiratory Diseases."

benefits of moderate winds, electric stimulation and other peculiarities of elevated resorts, will convince any investigator of the soundness of the climatic argument. This method of analysis culminates in the crowning evidence of immunity, partial though it may be, which increasingly manifests itself as the ideal climate for the individual patient is reached. On this is based the unanswerable argument which is attested to by the ample experience of thousands of invalids in the elevated Western States.

In a paper of this kind one is necessarily limited in the presentation of details. You must not be fatigued by the countless illustrations possible. I would like, however, to present the following case, because its favorable result, due wholly to climatic effect, challenges any experience possible at the seaside or in the lowlands.

Dec. 19, '99, Mr. W. A. M., age 42, accountant from an interior town of Colorado, was seen by me for the first time. Twenty-four years ago he had come from Newark, Ohio, one year after a "cold" following chills and fever; had then night sweats, &c., and had yellow expectoration for one year. Probably breaking down of lung tissue occurred then, for he had no night sweats or fever or severe symptoms in Colorado, except in 1896 he had hemorrhages at his present home at an elevation of 8,000 feet. Previously to that he had lived on a ranch at a lower elevation, 6,500 feet. Though with marked inheritance to tuberculosis, improvement at first, in 1875, was so decided he tried again to live in Ohio, but had to relinquish this idea and come back to Colorado within one year after his return East. The present condition is the most remarkable of the many arrests of consumption I have ever seen. The right lung is enlarged downwards and inwards and the left lung is apparently all gone except that portion in the front part of the chest and above the heart. The heart is now moved to the left and the apex beat is in the axillary region in the 5th interspace. An excavation extends from the latter point around underneath the scapular and left inter-scapular space and upwards to the left clavicle. Yet for years he has held his weight at about 118 pounds, (heighth, 5 ft. 5 in.,) pulse is 80, respiration 20, and spirometrical record 140 cu. in.; rides horseback; holds a clerkship and talks of matrimony. "One swallow does not make a summer"to be sure;but the question is a fair one—

under what opposite or different climatic conditions could such a result be obtained?

In conclusion, it is evident that when we compare climatic influence with the other agencies for good in our curative prescriptions for tuberculosis, we can justly conclude that it should stand first of them all. The concensus of the opinion of medical men would place it, with its hopeful mental effect, among the most curative means from which we can select our combination treatment.*

Neither is it difficult to link this means to the other curative aids, for the criticism of poly-pharmacy must not be allowed to shut out anything that will help.

Next to climate change and necessarily linked with it, and about equal to it in importance, come out of door life and exercise. This and climatic selection combined amount to 30 to 45 per cent of what can be done for active, germ proved cases; while, in latent and inactive cases, they may be said to perhaps represent from 45 to more than 70 per cent. of the cure. Then, admitting that the combination of curative aids should be individual and different for different classes of cases, we ought to have the four following divisions, each of which may be variously estimated to make up from nothing to 20 or 25 per cent of the total of good to be accomplished. Namely: 3 "Good feeding, special dieting and attention to the alimentary canal." 4. "Medical supervision and medical treatment." 5. "Inhalation, local medication and surgical interference." 6. "Specific medication based on anti-toxin treatment."

Duly weighing all these means that are helpful, and having in mind as much of approximate immunity as is possible to obtain in each individual case, we may, I think, safely conclude that there is no single agency equal in lasting results to a suitably adjusted change of climate. For where it can be had, it implies going from causative to curative conditions an improved mental influence and,—in the utilization of the new climate,—an out-door life or occupation.

* "The Modern Treatment of Tuberculosis." Report to A. M. A., '98, Journal, September 24, 1898,

# MY OWN CASE WITH DEDUCTIONS DERIVED FROM THE SAME.

BY JOHN H. METZEROTT, M. D., WASHINGTON, D. C.

I am one of those who believe that many cases of Tuberculosis would be cured which are not cured now, were the disease diagnosed at a sufficiently early date. I am likewise of the opinion that even when the malady has progressed quite far, that a fair percentage of cures may still be effected by instituting a rational therapy. I am also convinced that the duration of life of many an apparently hopeless case of consumption may be indefinitely prolonged by resorting to dietetic, climate and other hygenic measures. I make these assertions with a positive assurance of their accuracy, basing my deduction entirely upon what I have observed in myself, in members of my immediate family and the almost miraculous results beheld at the leading sanataria of Europe and the Desert of our own country. Indeed I can go still further and make the extravagant assertion that few indeed are those dying of other affections than consumption, in whom the post-mortem do not show some evidence of the disease contracted during some period of life. If I speak the truth, barring a few autopsies held upon children, it has not been my lot to behold a single post-mortem in the great pathological laboratory in Vienna during an irregular attendance of nearly four years, where it could be positively said by the pathologist that the subject had been completely free from the disease during his entire life. Now of course, there are those who will dispute this point I am making, but they will nevertheless admit that it is rather the exception to find perfectly sound lungs at death, in which there are no pleuritic adhesions or infiltrations of any sort in the lung tissue itself. If this then be admitted, it must also be conceded that while the death rate from Tuberculosis is about one out of every seven or eight, the number who recover from the malady is

Read before the American Congress of Tuberculosis, February 22, 1900, by title, and before the Medico-Legal Society, March 21, 1900, in discussion of fourth question.

infinitely greater than that of those who die,—it being taken for granted of course that every individual having a tuberculous focus is consumptive whether the process exhibits the tendency to heal spontaneously or not. This old thread worn fact, I wish to bring out forcibly, for it emphasizes an established truth, namely, that the disease for the most part is not as fatal as is generally supposed and that it only becomes a serious affair when it transcends beyond a certain limit, or occurs in an individual whose environment and habit favor its rapid development. The gentleman from Maryland truly and concisely expressed himself last night, when he stated that "consumption was a hunger for air and light," and that it thrived among those who did not avail themselves of the bounteous gifts of old mother nature." If we now bear in mind that there are two principal types of tuberculosis, the florid, and the fibroid, that scrophulosis and lupus are forms of tuberculosis and that all the remaining types differ from them only in degree, it will be seen that tuberculosis taken as a whole is an affection for which an immense amount is and can be done.

But while more is accomplished therapeutically in the treatment of this disease than ever heretofore, I am sure it is nothing compared to what will be done in the future, when the state recognizes the golden axiom, that the care of the health of the individual is her greatest concern. I say gentlemen, when that fundamental principle is fully realized by the civilized governments of the world, then we may expect that most liberal provisions will be made for the consumptive whatever his walk in life. At present however, only a selected few have an opportunity of getting well, but I yet hope to see the day when that chance will be afforded to all, whether he or she be a provider of a family or not.

And now for my own case, which is not out of place, since it affords an argument for the rational of the great sanatarium movement which at present is sweeping the United States. In the fall of '86 on the day when I was about to return to college, I was reluctantly induced by my mother to undergo a physicial examination at the hands of a local specialist. She had observed during the summer that there was something radically wrong with my lungs, and acting upon a well founded and maternal impulse had made an appointment with the doctor unbeknown to my-

self. I recall the hesitancy with which I entered the physician's apartments, for although I was conscious that I had an uncontrollable cough, had experienced night sweats, had suffered much from excruciating pains in the front and the back of the chest, had lost much sleep and flesh as well, and in addition expectorated copiously and continuously, I nevertheless with the characteristic euphoria of a consumptive persuaded myself that it was only a transient affair, from which I would recover sooner or later. Not satisfied with the diagnosis and the rather unfavorable prognosis rendered by the local specialist, I went to the elder Bowditch and his son, hoping that they would tell me that I could continue my studies at college. They did not give me much encouragement, and so I came to New York and consulted the late Dr. Alfred Loomis, who at first advised me to go to the Adirondacks, but later after more mature deliberation recommended a warmer climate, such as would be afforded by Southern California and Arizona. It is for you to infer whether the professor regarded my case as a moderately or very severe one, but I myself am inclined to think at this late date that the third stage had been reached and that when I stepped upon the train for Los Angeles, that I had not one moment of time to waste. At any rate, I was supported on the arm of an attendant, when I entered the office of the Sierre Madre Villa, that time one of the popular resorts for consumptives in Southern California. For more than a week I was scarcely able to walk one hundred yards without resting. The dust of the desert had aggravated my cough, and I coughed incessantly, expectorating an alarming amount of sputa. The night sweats troubled me more than they did in the East and I do not believe that I exaggerate when I say that if the sheets upon which I slept had been submerged in a tub of water that they could have been more drenched. Concomitant with these annoying symptoms I experienced the most distressing pleuritic pains, which I can describe in no other way than to say that my ribs felt as though they had become displaced and by reason of their overlapping each other caused stitches in my side whenever I took deeper inspiration. I was also fevcrish and on several nights suffered from violent shaking chills. This then was my state of health when I commenced my climatic treatment in the San Gabriel Valley in Southern California.

At first my improvement was very slow indeed, and was not

perceptible until I took to daily horseback riding. In the selection of my horse I thought at the time I was most unfortunate, for I had been impressed more by his general appearance than his gentleness. The result was that I found myself the possessor of a California broncho, possessing all of the typical traits of that much abused animal. On the first occasion it took four men to hold the animal upon my mounting into his saddle. My mother seeing me, looked askance and as for the guests every one said it was suicide, but I was indifferent, and that is the probable reason why I did not fare worse. Being killed by a horse did not seem half so bad to me as dying of consumption. The first day I rode my prancing steed scarce an eighth of a mile, but I persevered and in three months time, when I made a change further inland to Arrow Head, situated in a sheltered nook in the San Bernardino Mountains,I never rode less than ten and on many occasions twenty miles and even more daily, always however experiencing severe pains in my side and becoming short of breath when the exercise was at all violent.

At Arrow Head, which was an ideal retreat in every sense of the word, I experienced a set back, all of my rather severe symptoms returning, if anything in a more aggravated form than before. I cannot exactly account for the change, but old timers, who had cured themselves of the disease told me it was always so, that the crisis had been reached and that a favorable change would ensue. The turn for the better being delayed I deliberated for a long time upon the advisability of returning East, but when the day for doing so arrived I felt a little improved and deferred my trip. Now I want to digress here for a moment, gentlemen, and state that the old Californians were right in what they said and that on a great many occasions I have beheld the turning point of a tuberculosis ushered in with aggravated symptoms, which for the time being causes patients to imagine that they are worse. Many an unfortunate has made the mistake of his life in abandoning a climatic treatment at this most critical time and subsequently paid the penalty of his folly. I for one never fail to remind my patients of this likelihood when I send them to a distant clime. At Arrow Head I lead an out door life, riding in the morning, exploring the adjacent canyons in the afternoon,and visiting each day the ranch of the late Governor Watterman where I ate from three to five pounds of grapes each day as

long as any remained upon the vines. There are those of you of course who ridicule the grape cure, on account of the small amount of nutriment in the grapes, but let me again express to you my firm conviction, not only in tuberculosis but in other affections,grapes are a most valuable adjuvent to the other forms of treatment. They are relatively rich in potassium, and that, you know, is a powerful reconstructive and alterative. Grapes are also soothing to the throat, in fact they are a pleasant demulcent.

My intractable cough, which clung to me tenaciously, I treated first by never giving away to an impulse to cough unless I was compelled to do so. I remember that often the tears coursed down my cheeks while attempting to suppress the same. I made much headway, however, by cultivating the tolerance of the tickling sensation in my throat. Sometimes I did not succeed in warding off a severe paroxysm of coughing, I nevertheless spared myself much inconvenience in employing this procedure. Sometimes to aid me I would resort to gum arabic of rock candy which I would allow to slowly dissolve in my mouth. Flesh I gained very slowly but I increased my weight by forcing myself to eat. I never ate less than a certain quantity of food at each meal and tried each time to eat more. I ate considerable meat, took lots of honey, drank milk, whenever I could obtain it, ate all cereals placed before me and now and then took a little beer, stout or brandy, but of the latter always with considerable circumspection. I am now sure that I could have gotten along very well without stimulants of any sort.

Reasoning that if it was good to be out of doors the greater part of the day, it was still better to be out for the entire twenty-four hours, I conceived the idea of making a trip by wagon into the very heart of the desert where I knew the air was absolutely pure. Unfolding my plans to three other invalids it was not a long while when I found myself seated upon a large covered four horse wagon making my way with my associates across the Canon Pass into Death Valley and the Lava beds, determined there to journey until I was fully restored to my health. At first we pitched a tent each night when we had completed the necessary miles constituting a day's travel, but as time went on, packing and unpacking the canvass and driving and clearing stakes became irksome in the extreme and we abandoned our tent and wrapping ourselves

in our blankets slept upon the bare ground. At this time I was comparatively well, although the process in my lungs was still active as was evident to myself by the crackling rales, both large and small, which I could produce at pleasure by resorting to violent exercise, such as running, wielding an ax, or lifting heavy weights, et cetera. Until we reached the Needles the weather was fairly good, but upon crossing the Colorado a decided change in temperature took place. It became windy and intensely cold. As we progressed further inland, we were subject to sand storms and blizzards which delayed our progress and caused us to again resort to the tent. But the tent was small and becoming an obstacle to the wind, sooner than go through the trouble of erecting it every day, we abandoned it altogether, protecting ourselves as best we could from the falling rain, and the snow which though heavy fortunately never lay long upon the soggy ground. Notwithstanding the wind, rain, and snow my health improved almost daily, and my resisting power increased perceptibly. The horses becoming run down by their uninterrupted arduous work, we lightened their burdens, all but the one driving, walking. The walking did me an immense amount of good and I later figured that of the twelve hundred miles journey by wagon in the desert, I must have walked not less than eight hundred. Reaching Ash Forks we went into the Mugallon Mountains, deeply covered at that time with snow. The thermometer was below zero each night, but cold as it was we did not suffer. In fact it was more comfortable, than the desert with its sand and winds. When they were available we spread pine boughs upon the snow and over them our blankets. The rarity of the air and the ozone from the huge pines changed the character of my expectoration. At first there was an increased amount, but notwithstanding my lungs felt freer than ever before. It was really remarkable how the air stimulated my bronchial secretions,—from a thick yellow ispissated sputa the expectoration was converted into a watery mucoid frothy matter, which though copious was healthy in appearance even to a layman. After spending a month in the Mugallons we journeyed into the Tonto Basin, where I had opportunities to resort to a healthful procedure which I had abandoned in the mountains, namely cold ablution of the body, and which I have practiced daily ever since. When we reached the plains after again crossing the Pinal Range

where there was less snow that in the Mugallons, the season had so far advanced that the desert had become a veritable cauldron. But I was toughened and stood the one hundred and thirty or forty degrees better than the others and in addition, I walked with a firm and elastic tread, a little thinner than when I left Arrow Head but effectually cured of my disease.

That, gentlemen, is the brief history of the first year of the treatment of my affection. I was well then, but I wanted to stay well, and so after returning home for a few months to my mother's farm in the hills of Maryland, I revisited California and Arizona—repeating the procedure for a third time a year later. Subsequently I went to Jefferson college where the close confinement in the at that time rickety and illy ventilated building made me sick and again almost laid me out.

I did not give up the study of medicine however, but resuming my work at a local school I managed to obtain my degree and simultaneously to keep well by driving twenty miles every day rain or shine. From the medical school I went to the Garfield hospital remaining there a year and a half, and from thence to Vienna where I managed to attend the clinics for nearly four years, alternating my work with long walks into the Wiener Waldt and excursions during the summer into the higher mountainous regions of the Eastern and Western Alps. My cure I attribute to the cultivation of the power of resistance, to the sunlight, and the open air life I have been and am still leading.

# SHOULD THE USE OF ANTITOXINS IN TUBERCULOSIS BE CONDEMNED FROM A PURELY SCIENTIFIC POINT OF VIEW?

BY DR. KARL VON RUCK, OF ASHEVILLE, N. C.

To attempt to answer the above question from a scientific basis only, would require a review of all the pertinent data in bacteriology, experimental therapeutics and clinical medicine, which have accumulated within the last twenty years. Having done this, we would find, that our exact kowledge bearing upon the subject of toxins and antitoxins in general, and of their relation to tuberculosis in particular, is insufficient to come to a definite conclusion.

As my available time does not permit me to attempt such a review, and finding the scientific facts too meagre, I desire to open this discussion from the standpoint of the therapeutist rather than that of the scientist, referring to such facts which speak for or against an affirmative answer.

Presuming that my hearers are familiar with the subject of bacterio-therapeutics as evolved and applied in the several infectious diseases, I may give my definition of an antitoxin as a specific remedy having the power to antagonize, antidote, neutralize or to destroy the harmful effect of a specific bacterial toxin; to which I may add, that as commonly applied and understood, the term antitoxin refers to blood serum obtained from animals, which have undergone a course of treatment or immunization with toxins derived from specific pathogenic bacteria.

The principle of bacterio-therapeutics rests upon the established relation of certain pathogenic bacteria to certain infectious diseases and upon the observations, that with recovery from some of the infectious diseases, the individual is protected for a longer or shorter period of time against reinfection or recurrence of the disease.

This change from susceptibility to immunity is believed to

Opening paper on fifth question. Read before the Medico-Legal Society and American Congress of Tuberculosis, February 22, 1900.

have been brought about through the action of specific toxins derived from the specific germs during the course of the disease, and but for such acquired immunity recovery from infectious diseases would seem impossible.

Experimental medicine has shown, that in several of the infectious diseases a like change from susceptibility to immunity can be induced by the artificial introduction of specific bacterial toxins, and also that the blood serum and other tissues of the immunized animals have the power to antagonize or overcome the deleterious effects of the bacterial toxin, and thus was evolved the theory of toxins and antitoxins.

The hope that such immunization and production of antitoxins was a general law applying to all infectious diseases has, however, not yet been realized.

The production of antitoxic serum for tuberculosis has been attempted by several experimenters and also by the writer,and a number of preparations have been put on the market within the last five or six years. The chief credit for the labor in this direction is due Professor Maragliano, but all the scientific data which he and others could show, is the fact, that the antitoxic serum for tuberculosis contains protective properties of only a very feeble power, the degree attained being, that a minimum fatal dose of crude standardized tuberculin can be neutralized by injections of an equal quantity of serum.

Professor Maragliano claims for his preparation, that its clinical application in tuberculosis stimulates the production of new antitoxins in the patient, and that it has therefore immunizing properties also, which I however, have not been able to confirm either with Maragliano's or my own preparation nor with several others in my animal experiments.

If we may compare the serum preparations for diphtheria with those now obtainable for tuberculosis, we find that for a successful result in diphtheria a serum of an antitoxic power of several thousand units is required, while the best that has been accomplished for tuberculosis is a power of only one unit, and if any of the available preparations have clinical valus, the latter is not likely to be due to their antitoxic properties, and from other considerations presently to be referred to, it is an open question whether or not a true antitoxin for tuberculosis is desirable, as is the case with diphtheria.

The latter is an acute, infectious disease, and in uncomplicated cases recovery occurs frequently after a short, definite

course of illness, when the patient becomes temporarily immune. The diphtheria bacillus is a most rapid grower, and undergoes rapid disintegration. The pathological alterations in diphtheria are confined to the mucous surfaces and repair is rapid and complete after convalescence. The acute symptoms bespeak an acute intoxication, and if in uncomplicated cases death ensues, it is the direct consequence of bacterial poisoning, and if under such conditions we can intervene with a remedy of the nature of an antitoxin, we may thereby avert death.

In tuberculosis, on the other hand, we have, as a rule, a chronic infectious disease in which immunity does not occur; patients acquire no well marked toleration to toxins, on the contrary they are and remain highly sensitive to them, so that toxins may be applied with almost unerring certainty for diagnostic purposes in most minute doses. The tubercle bacillus is an extremely slow grower, and resists solution or disintegration to an astonishing degree. Tubercle bacilli can be demonstrated in old, fibroid lesions and even in encapsuled caseous foci, many years after the tissues were first involved in tuberculer disease, and long after the conditions for the life and growth of the bacteria have apparently disappeared. No solution of the tubercle bacillus has been possible and the extraction of toxins from their bodies was only accomplished by the removal of their great quantity of fat, and even then the bacilli retain their form.

The pathological alterations in tuberculosis are usually deep seated and interstitial, the tubercles themselves are non-vascular, undergo rapid caseation, or gradual fibroid transformation and in either case they leave a permanent effect.

The clinical symptoms do not suggest the poisoning of the patient with specific toxins, and tubercle formation may be in progress and large areas of tissue may contain tubercles without general symptoms of intoxication being present. The patient's life is never threatened by the action of specific toxins from the tubercle bacillus.

With such radical difference in the specific germs, in the pathology and in the natural course of the disease to which others might be added, the question arises are there specific toxins liberated in the course of tuberculosis to an appreciable amount? And since toxins appear necessary for the production of both natural and the artificially induced immunity in

all infectious diseases, may the deficiency of toxin formations in tuberculosis not account for the continued susceptibility to tubercular invasion of new tissues, and to the tuberculin test?

My own studies and observations incline me strongly to take this view, which my experimental results and therapeutical observations confirm.

I am well aware that the general symptoms in the course of pulmonary tuberculosis in all its stages have been attributed, and are still being attributed to specific bacterial toxins whether of the tubercle bacillus itself, or of other associated germs, but I consider it a vital objection to the theory that toxins from the tubercle bacillus are responsible for the general symptoms, when it can be shown that months after such symptoms have been present, the tubercular subject still shows general and local reactions to most minute doses of the specific toxins, while the gradual introduction of the latter we can often reach one hundred times the amount of the ordinary test dose in so short a time as a month, and can do this without producing the slightest symptoms of any kind. Surely if the tubercular patient had been absorbing like toxins from his tubercular lesions for months or even years, he would thereafter not show reaction to a small fraction of a milligram of toxins.

This is not the time and place to give you my views as to the cause of the general symptoms and especially the fever which we observe in the various stages of pulmonary tuberculosis and which I have recorded in an article on fever in the January number of the Journal of Tuberculosis on page 94.

To conclude my remarks, I may say again, that inasmuch as toxins are necessary to produce immunity, and since a true antitoxin will antagonize, neutralize or destroy the toxins, the latter could only have a place in the therapy of infectious diseases having an acute course during which the life of the patient is in jeopardy by excessive production of toxins, which is not the case in tuberculosis, and certainly not in its chronic form.

In order to justify the use of a pure antitoxin in tuberculosis, it must first be shown that specific toxins from tubercle bacilli are present, which have an unfavorable effect on the course of the disease.

If, however, it can be shown, that the serum preparations

which we call antitoxins have the power of inducing a change from susceptibility to immunity, and act therefore in the same manner as do toxins, then of course the use of such a serum cannot be condemned either from a scientific or therapeutic standpoint.

So far it has not been shown that any of the antitoxic serums which have been produced by Maragliano as well as by others and by myself, have such properties to a degree that they produce even partial or slight degrees of immunity, and inasmuch as such results have been accomplished by the direct injection of toxins, and their administration appears to be perfectly safe, and is attended by excellent clinical results, the direct immunization with toxins is justified from a scientific as well as from a therapeutic point of view.

# SOME RELATIONS BETWEEN INEBRIETY AND TUBERCULOSIS.

BY T. D. CROTHERS, M. D., SUPT. WALNUT LODGE HOSPITAL, HARTFORD, CONN.; VICE PRESIDENT MEDICO LEGAL SOCIETY OF NEW YORK; VICE PRESIDENT AMERICAN CONGRESS OF TUBERCULOSIS.

Dr. Crook published an analysis of 50 cases of tuberculosis; 39 of these had used alcohol to excess and 9 of them were chronic inebriates; the rest were periodical drinkers and persons who used spirits in so-called moderation. No doubt they were all inebriates, only in different stages, and the tuberculosis was only another form of degeneration following naturally from the inebriety. These statistics confirm other observations made by many persons, showing the interchangability between inebriety and tuberculosis. The almost universal termination of inebriety by pneumonia indicates this association. The exhaustion from the excessive use of drink is manifest, first on the nervous system and then on the lungs. There can be do doubt that local pneumonic lesions occur and recovery follows in many cases of inebriates. Later, when the system is reduced, the bacilli find lodgment in these damaged lung sections and multiply with great rapidity. Inebriates exposed to the changes of the climate often suffer from what is termed "pleurisy" or circumscribed pain over the lungs. This passes off in a variable time, but recurs from special, exciting causes. Later, sudden tuberculosis appears and death follows in a short time. In other cases, sudden fatal pneumonia occurs. In these instances there can be no doubt of initial lesions which have existed for a long time before. The association of inebriety with tuberculosis is so intimate that when one develops the other subsides. In many cases the apparent restoration to health from tuberculosis is followed by the outburst of inebriety. When the inebriety is checked the inflammation of the lungs breaks out

Read before the Medico-Legal Society in joint session with the American Congress of Tuberculosis, February 22, 1900.

again. Many of the prominent cures by gold-cure specifics have died soon after from consumption. All use of alcohol to excess is followed by catarrhal and bronchial inflammations. These are usually chronic, and do not attract much attention, but they are to be regarded as hints of the possible inflammation and tuberculosis likely to appear at any time in the body of the lung. It is said that the bronchial inflammation extends downward to the substance of the lung, causing rapid, acute and often fatal inflammations. The use of alcohol as a remedy in diseases of the lungs is very fatal, always increasing and intensifying the local degeneration, as well as giving form and direction to the general dissolution of the whole system. It is a curious fact, not well known, that alcoholism and tuberculosis go hand in hand in different members of the same family. First, one is affected, and then another. The causes are obscure, and by no means sufficient to account for the disease; thus one member of the family, living in excellent hygienic conditions, exercising unusual care, suddenly develops tuberculosis, which teminates fatally in spite of every care. Another member of the same family will develop inebriety without any apparent exciting causes and become chronic in a very short time. Such cases frequently die from pneumonia. The old-time use of alcohol in large quantities to check tuberculosis was thought to be efficient. Later, it was found to have only masked and very likely increased the degenerations of the heart and kidneys, which ended in sudden collapse. The modern views of tuberculosis, pointing to the growth of a specific bacillus as an active cause, does not change the clinical facts so often observed. There must be in the system some degree of low vitality and low resisting power to this bacillus, as well as favoring soil conditions to encourage its growth. It is now well known that alcohol has the power of especially breaking down nerve cells and fibres, not only in the brain, but in all parts of the body. The lungs, being the most active, and the chemical changes of blood and air going on here rapidly, would naturally feel this destruction first. Hence, alcoholism would predispose to consumption and other lesions of the lungs. Some remarkable clinical histories have been gathered by Mr. Sharkley in the British Medical Journal. In one case mentioned five children of consumptive parents all died from inebriety. Ten descend-

ants from these children furnished six cases of pneumonia and tuberculosis. The other four died in infancy. Three of these children of the third generation were degenerates and used alcohol, dying without progeny. In another case the alcoholism of both parents was followed by four tuberculous children and two inebriates. Of their descendants four drank to excess and died from pneumonia following drink excess. In still another case where the mother was an alcoholic, four children all died of tuberculosis. These and other cases establish the relation between the two diseases to be very intimate. Along with these cases are very commonly associated catarrhal and bronchial conditions, also laryngeal inflammations, which seem to be limited and chronic, continuing through life. Dr. Mays reported ten cases where tuberculosis followed the excessive drinking of parents. Some of these cases before death became excessive spirit-drinkers, and died from complications of both spirits and tuberculosis. Other cases coming from tuberculosis parents suddenly developed inebriety in middle life and drank impulsively up to death. Dr. Wilks, in an examination of many cases, asserted that in all cases of inebriety there were degrees of paralysis which affected the lungs first, incapacitating them for normal activity. He found dullness and diminished respiratory murmur in a large number of inebriates, with other indications of deficient lung activity. Dr. Jackson asserted that the parenchymatous and interstitial changes observed in the liver and kidneys extended to the lung, and by cutting off sections and diminishing the interchange of gases, produced oxygen starvation; and this he believed to be the true explanation of these associated diseases. Dr. Thomsen reported a large number of cases where the inebriety was marked by venous congestion on the surface. These cases died from pneumonia and tuberculosis. There was also associated bronchial and laryngeal inflammations. Other authorities have asserted that the prevalence of consumption among the American Indians is due very largely to the use of alcohol. It is asserted that tuberculosis was rarely seen among the Indians until alcohol was used. Then, it developed and was rapidly fatal in all cases. It is difficult to point out any theory that will account for this remarkable relationship in all cases, but it is altogether probable that the action of alcohol on the nerve centres, corroding and destroying their power, extends to the

lungs, as well as to other parts of the body. This degeneration forms congenial soil for the growth of the bacilli which would otherwise not find lodgement. Practically in all cases of inebriety the quickened heart action and perspiratory irregular action are indications of organic disturbances which may become fatal. Dr. Mays urges that tuberculosis be considered a disease of the nerve centres and neurosis rather than organic destruction. The lesion of the lungs is asserted to be only a symptom of some grave central lesion. He brings ample proof to sustain his theory, and if this is accepted, the association of the two diseases is most natural. This view seems to be confirmed by my experience, and explains many of the very remarkable facts and clinical histories which are noted. The modern efforts to isolate the consumptive and treat him in surroundings where the conditions are all aseptic brings with them a certain amount of nerve rest which would be good treatment from the neurotic theory of the causation of consumption. To isolate the alcoholic and treat him in the best aseptic condition is equally rational from any theory that is scientific. At all events, the close relations between these diseases must be recognized in all efforts and plans of treatment.

# PSYCHOLOGICAL SECTION OF THE MEDICO-LEGAL SOCIETY.

## ANNUAL REPORT, JANUARY 1, 1900.

To the Fellows of the Psychological Section and of the Medico-Legal Society.

The following subjects are within the Domain of Studies pursued by the Section:

1. The Medical Jurisprudence of Insanity.
2. Inebriety, Heredity and Sociology.
3. Criminality and Criminal Anthropology.
4. Mental Suggestion, and especially of Physicians as to Clinical Suggestion and Therapeutic Hypnosis.
Experimental Psychology.
7. Clairvoyance.
8. Facts within the Domain of Physical Research, including investigation into so-called Modern Spiritualism.

The work of the Section for the year, since the last Annual Report, may be summarized as follows:

The following papers, addresses and articles have been contributed to the Section during the year 1899:

"Instant Death by Decapitation an Impossibility According to Biological Analysis." By J. Mount Bleyer, M. D., of New York.

"Resolutions on Memorial to the English Home Secretary on Case of Florence E. Maybrick." By Clark Bell, Esq., of New York.

"Resolutions on Insanity and Crime." By Rev. Phoebe A. Hanaford, of New York.

"Resolutions as to Sex in the Commission of Crime." By the Executive Committee of the Society.

"Sex in Punishment for Crime." By Clark Bell, Esq., of New York.

"Annual Report of Psychological Section for 1898." By the Vice Chairman of Section.

"The Criminal Treatment of the Insane." By W. H. S. Monck, Esq., of the Dublin Bar.

"Double Personality." By Wm. Lee Howard, M. D., of Baltimore, Md.

"The American Government and People and the English Home Secretary." By Clark Bell, Esq., LL.D., of New York.

"Anti-Vaccination in England." By the Editor.

"The Case of Mrs. Place and Governor Roosevelt." By Clark Bell, LL.D., of New York.

"Counsel for Hospitals for the Insane." By the Editor.

"How far may Overpressure in Education be Considered as a

Factor in Degeneration of Nerve Tissues." By Sophia McClelland, of New York.

"Corporal Punishment for Crime." By Judge Simeon E. Baldwin, of the Supreme Court of Connecticut.

"The Same Subject." By Clark Bell, LL.D., of New York.

"Views of Same Subject." By Chief Justice Charles B. Lore, of Delaware; Chancellor John R. Nicholson, of Delaware; Judge J. G. Grubb, Supreme Court of Delaware; John Nolan, Chief of Police of Wilmington, Delaware; Commissioner Edward Fowler, of Laurel, Delaware; Samuel R. Davies, Esq., of Richmond, Va.; Jno. G. Shorttell, of Chicago, Ill.; Z. R. Brockway, Esq., of Elmira Reformatory, N. Y.; Frank Moss, Esq., Ex-Superintendent Police, New York; Judge Clarence S. Meade, of New York; Hon. Wm. P. Letchworth, of New York; Dr. M. R. Leverson, of New York; John G. Williams, of Maryland; George R. Gaither, Jr., of Baltimore, Md.

"The Whipping Post for Wife Beaters." By Rev. Phoebe A. Hanaford, of New York.

"Corporal Punishment for Crime." By Rev. Antoinette Brown Blackwell, of New York.

"Preliminary Report Maybrick Memorial Committee."

"Rights of American Girls who Marry Foreigners." By Clark Bell, LL.D.

"The Citizenship of Mrs. Maybrick." By Clark Bell, LL.D.

"The Case of Dreyfus." By the Editor.

"Christian Science and the Law." By Hon. Moritz Ellinger.

Same Subject by Howard Ellis, Esq., Carol Norton, C. S. D., of New York, John Carrol Lathrop, C. S. B., and H. Gerald Chapin, Esq.

"Pharaphasia." By Hart Vance, Esq.

Report of Committee of Delegates to the Seventh International Congress on the Abuse of Alcoholic Drinks." By Chas. H. Shepard, M. D.

"The Criminal Appearance." By Clark Bell, LL.D.

"Criminal Lunatics in England." By Sir Matthew White Ridley.

"The American Auxiliary Committee to the Section of Medical Jurisprudence," of the Paris International Medical Congress of 1900.

"The Prison System of England and America Contrasted."

"The Case of Dreyfus." By Clark Bell, LL.D.

"The Life and Death of Col. Robert Ingersoll." By the Editor.

"A Psychological Study of Jurors." By T. D. Crothers, M. D., of Hartford, Conn.

"Premature Burial." By E. Camis, Esq., of Paris; H. G. Garrigues, M. D., of N. Y.; Clark Bell, Esq., of N. Y.; H. Gerald Chapin, Esq., of N. Y.; Dr. Carleton Simon, of N. Y.; Henry Morrison, Esq., of N. Y.

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Henry Hulst, M. D., Grand Rapids, Mich.
Prof. Thomas Bassett Keyes, of Chicago.
R. J. Nunn, M D., of Savannah, Ga.
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The Standing Committees recommended for 1900 are as follows:

TELEPATHY, MODERN SPIRITUALISM, &C.—Judge Abram H. Dailey, Brooklyn, N. Y., Chairman; Thomson Jay Hudson, Esq., Washington, D. C.; Sophia McClelland, New York; R. J. Nunn, M. D., of Savannah, Ga.; C. Van D. Chenoweth, Shrewsbury, Mass.; Ursula N. Gesterfield, of Chicago, Ill.

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MORBID PSYCHOLOGY.—William Lee Howard, M. D., Baltimore, Md.; T. D. Crothers, M. D., Hartford, Conn.; Prof. C. H. Hughes, of St. Louis, Mo.; Carleton Simon, M. D., of N. Y.; E. Sanger Browne, M. D., Chicago, Illinois.

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PSYCHO-THERAPEUTICS.—Prof. A. A. d'Ancona. Chairman, San Francisco, Cal.; Henry S. Drayton, M. D., N. Y. City; Rose de Vaux Royer, Sackville, N. B.

The Woman's Committee of the Section is composed as follows:

COMMITTEE OF WOMEN.—Caroline J., Taylor, Chairman; M. Louise Thomas, C. Van D. Chenoweth, Rosalie Dailey, The Countess Bettini di Moise, Sophia McClelland, Ida Trafford Bell, Rev. Antoinette Browne Blackwell, Laura A. C. Miller, Rev. Phebe A. Hanaford, Florence Dangerfield Potter.

Every member of the Society is eligible to membership in the Section, as also the wives of members of the Society.

The annual Dues of the Section are $1.50, entitling the members to the Medico-Legal Journal free.

The Section is open to all Stulents of Psychological Science.

There have been three deaths during the year:

Wallace C. Andrews, whose terrible death by fire with every member of his family all will recall; Dr. S. B. W. McLeod, M. D.,

ex-President of the Medico-Legal Society, and Prof. Elliott Coues, of Washington, former chairman of this Section.

Three members have resigned and four names stricken from the rolls for non-payment of dues.

The following is the Roll of members of the Section:

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January 1, 1899. Respectfully submitted,

CLARK BELL,

Vice-Chairman and Secretary.

NOTE:—The officers recommended by the report were duly elected by the Executive Committee at January meeting, 1900.

# SECTION OF MEDICO-LEGAL SURGERY—MEDICO-LEGAL SOCIETY.

## ANNUAL REPORT—JANUARY 1, 1900.

TO THE FELLOWS OF THE SECTION OF MEDICO LEGAL SURGERY AND OF THE MEDICO-LEGAL SOCIETY:

The domain and province of the Section is defined by the following standing resolution:

*Resolved*, That all questions in medico-legal surgery are to be deemed within the scope and province of the Section on Railway Surgery, including, especially, military and naval surgery, and the broad domain of surgery in its relation to medical jurisprudence.

The Section is intended to embrace, besides naval, military, and railway surgeons and counsel railway managers, railway officials, whether lawyers or surgeons; many of whom have already united with the body, and who are eligible to membership under the statutes of the Society.

Three members of the Executive Committee constitute a quorum, and five of the Borad of Officers of the Section.

The work of the Section during the preceding year has been devoted to the advancement of the science of the medical jurisprudence of surgery in all of its branches. The papers contributed upon these branches of science have been in part published in the Medico-Legal Journal, which is the official organ of the Section.

The following is a *resume* of the work of the Section during the year:

"Physicians—Expert Witnesses: Some Reforms." By Henry Wollman, Esq., Counsellor at Law, New York.

"Theory of Contact Shots." By W. B. Chisholm, Esq., of Auburn, N. Y.

"May an Unlicensed Physician Testify as a Medical Expert?" By the Editor.

"The Limit of Fees in New York to Assigned Counsel in Criminal Cases." By the Editor.

"Medico-Legal Surgery at the Paris International Congress." By the Editor.

"International Association of Railway Surgeons." (1899.)

"Hospital for Army Consumptives."

"Gun Shot Wounds of the Abdomen."

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Respectfully submitted,

CLARK BELL, Chairman and Sec'y.

NOTE.—The officers recommended by the Committee, were duly elected by the Medico-Legal Society at January Meeting, 1900.

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